

ATTACHMENT 11-2

CONFIDENTIAL PURSUANT TO THE PROTECTIVE ORDER

<p>1 Q Okay. And the PTP in the command "PTP 2 priority 1" refers to the IEEE standard; correct? 3 MR. PAK: Objection; vague. 4 THE WITNESS: It refers to, yeah, PTP. 5 MR. WONG: Q. It refers to the IEEE PTP 6 standard that we marked as Exhibit 93; correct? 7 A Yes. 8 Q Okay. And the use of the word PTP in all 9 five of the commands that are associated with you in 10 Exhibit 92, they all come from the IEEE standard 11 marked as Exhibit 93; correct? 12 MR. PAK: Objection; vague; mischaracterizes 13 the witness' testimony. 14 THE WITNESS: You mean the PTP -- 15 MR. WONG: Q. Let me ask the question -- 16 A -- word in the command? 17 Q Yes. 18 Let me ask a clean question. 19 The use of the word PTP in all five of the 20 commands that are associated with you in Exhibit 92 -- 21 A Right. 22 Q -- that word came from the PTP IEEE standard 23 that was marked as Exhibit 93; correct? 24 MR. PAK: Same objections. 25 THE WITNESS: Yes, it means the same.</p> <p style="text-align: right;">Page 138</p>	<p>1 the priority 1 attribute in the IEEE standard marked 2 as Exhibit 93? 3 MR. PAK: Objection; vague. 4 THE WITNESS: Yes. I think I chose it for 5 the intention to mean the priority 1 attribute of the 6 clock. 7 MR. WONG: Q. And is your answer the same 8 for the command "PTP priority 2"? 9 Is the priority 2 command parameter -- does 10 that refer to the priority 2 attribute in the IEEE 11 standard marked as Exhibit 93? 12 MR. PAK: Same objection. 13 THE WITNESS: It's referring to the same -- 14 that attribute, yes. 15 MR. WONG: Q. That attribute in the IEEE 16 standard? 17 A In the IEEE standard, yes. 18 Q Okay. And you knew about the priority 1 and 19 priority 2 attributes in the IEEE standard before you 20 started adding the "PTP priority 1" and "PTP 21 priority 2" commands to the iOS software; correct? 22 A Yes, I read the spec. 23 Q And you were aware of those two particular 24 attributes before you started adding the "PTP 25 priority 1" and "PTP priority 2" commands to Cisco's</p> <p style="text-align: right;">Page 140</p>
<p>1 MR. WONG: Okay. 2 Q And you -- in describing the function 3 performed by the "PTP priority 1" command, you 4 testified that it configures the priority 1 parameter 5 for the PTP clock; correct? 6 A Yes. 7 Q And the priority 1 parameter for the PTP 8 clock, that's the same priority 1 parameter that we 9 discussed in Exhibit 93; correct? 10 A When you say "parameter," I think they are a 11 little different in the CLI and the spec. 12 Q How are they different? 13 A The -- in the spec, it's the attribute of the 14 clock; right? When I say parameter, I mean the -- in 15 the context of the CLI command is a parameter. 16 Q Oh, I see. 17 So -- so the word priority 1 in the "PTP 18 priority 1" CLI command is a parameter of the command? 19 A Yes. 20 Q That's what you mean by -- 21 A Right. 22 Q -- parameter? 23 A Right. 24 Q Okay. Now, does the priority 1 parameter in 25 the CLI command "PTP priority 1," does that refer to</p> <p style="text-align: right;">Page 139</p>	<p>1 routing software; right? 2 A Yes. 3 Q How long did it take you to come up with the 4 "PTP priority 1" command? 5 A I don't remember how long it took for me to 6 come up with the list of CLI commands. 7 Q Okay. I'm just asking about the -- the one 8 command, "PTP priority 1." 9 A Right. 10 Q Did -- did that take you an hour to come up 11 with that command? 12 MR. PAK: Objection; vague. 13 THE WITNESS: You mean just to decide on the 14 syntax of the command? 15 MR. WONG: On the two words in the command. 16 That's right. 17 Q How long did it take you to decide on the 18 two words, "PTP priority 1," in that command? 19 A I don't remember. 20 Q Did it take you more than a day? 21 MR. PAK: Objection; vague. 22 THE WITNESS: Maybe not. I don't recall the 23 details of -- of this level. 24 MR. WONG: Okay. 25 Q Do you --</p> <p style="text-align: right;">Page 141</p>

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<p>1 understanding?</p> <p>2 A Yes.</p> <p>3 There -- so, when the CLI command is</p> <p>4 received, something needs to happen based on what has</p> <p>5 been configured as being specified as the parameter.</p> <p>6 So that's the interface I was referring to, that I</p> <p>7 hook up to the back-end behavior of the clock.</p> <p>8 Q And the back-end behavior for each command</p> <p>9 that you are associated with in Exhibit 92, did you</p> <p>10 write that source code?</p> <p>11 A I did write the source code.</p> <p>12 Q Did you have anyone else's help in writing</p> <p>13 the source code for those five commands associated</p> <p>14 with you in Exhibit 92?</p> <p>15 A No. I wrote all of them.</p> <p>16 Q The "PTP sync interval" command --</p> <p>17 A Yes.</p> <p>18 Q Well, actually, just for clarity, what</p> <p>19 function does the "PTP priority 2" command perform?</p> <p>20 A It configures another parameter which helps</p> <p>21 to determine the -- the clock.</p> <p>22 Q And that other parameter you're talking about</p> <p>23 is the priority 2 attribute that is defined by the</p> <p>24 IEEE standard marked as Exhibit 93; correct?</p> <p>25 A Yes.</p> <p style="text-align: right;">Page 146</p>	<p>1 command?</p> <p>2 MR. WONG: Q. When you --</p> <p>3 A When I -- when I chose to use priority 1;</p> <p>4 right?</p> <p>5 Q Yes, that's what I'm asking.</p> <p>6 A Yes. When I chose the word, I meant to</p> <p>7 configure this attribute for the clock. That was</p> <p>8 true.</p> <p>9 Q And this attribute for the clock, you're</p> <p>10 referring to the priority 1 attribute that's defined</p> <p>11 in the IEEE standard; right?</p> <p>12 A Yes.</p> <p>13 Q And your answer is the same for the</p> <p>14 priority 2 attribute defined in the IEEE standard,</p> <p>15 correct, with respect to the PTP priority 2 command?</p> <p>16 A Yes.</p> <p>17 Q And you chose the words sync interval because</p> <p>18 the IEEE standard marked as Exhibit 93 described --</p> <p>19 strike that.</p> <p>20 You chose the words sync interval because the</p> <p>21 IEEE standard marked as Exhibit 93 also used the term</p> <p>22 sync interval; correct?</p> <p>23 MR. PAK: Objection; vague.</p> <p>24 THE WITNESS: When you say that, it makes me</p> <p>25 feel that you -- it's a direct translate from the spec</p> <p style="text-align: right;">Page 148</p>
<p>1 Q Okay. What function does the "PTP sync</p> <p>2 interval" command perform?</p> <p>3 A It configures how often the clock syncs with</p> <p>4 the master.</p> <p>5 Q And do you recall earlier we were looking at</p> <p>6 the IEEE standard marked Exhibit 93 and a term called</p> <p>7 sync interval in there?</p> <p>8 A Right.</p> <p>9 Q Is the sync interval, that the "PTP sync</p> <p>10 interval" command refers to, the same sync interval</p> <p>11 that we discussed in Exhibit 93?</p> <p>12 MR. PAK: Objection; vague.</p> <p>13 THE WITNESS: I think that was -- was defined to be used to</p> <p>14 command was used -- was defined to be used to</p> <p>15 configure that part of the clock.</p> <p>16 MR. WONG: Right.</p> <p>17 Q And by "that part of the clock," you mean the</p> <p>18 sync interval attribute defined by the IEEE PTP</p> <p>19 standard; right?</p> <p>20 A Yes.</p> <p>21 Q Now, you chose the term priority 1 because</p> <p>22 priority 1 is an attribute that's in the IEEE</p> <p>23 standard; right?</p> <p>24 MR. PAK: Objection; vague.</p> <p>25 THE WITNESS: You mean when I wrote the</p> <p style="text-align: right;">Page 147</p>	<p>1 to the command.</p> <p>2 Is that what you mean --</p> <p>3 MR. WONG: No, no. I'm --</p> <p>4 THE WITNESS: -- when you ask the question?</p> <p>5 MR. WONG: No, no.</p> <p>6 Q My question is simply: When you -- you</p> <p>7 testified that the -- one second.</p> <p>8 Can you tell me again what the function is</p> <p>9 that the "PTP sync interval" performs.</p> <p>10 A It configures or determines how often the</p> <p>11 clock syncs with the master clock.</p> <p>12 Q And that functionality is described in the</p> <p>13 IEEE standard; correct?</p> <p>14 A Yes.</p> <p>15 Q And the IEEE standard uses the term sync</p> <p>16 interval to describe what you just described as the</p> <p>17 function of the "PTP sync interval" command; right?</p> <p>18 MR. PAK: Objection; vague.</p> <p>19 THE WITNESS: It's the same meaning.</p> <p>20 MR. WONG: Okay.</p> <p>21 Q So you chose the words sync interval for the</p> <p>22 "PTP sync interval" command because the IEEE standard</p> <p>23 used the same term to describe what the command does;</p> <p>24 right?</p> <p>25 MR. PAK: Objection; vague.</p> <p style="text-align: right;">Page 149</p>


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<p>1 THE WITNESS: I chose it based on my 2 understanding of the spec. And so it's -- it's just a 3 preference how -- how to express this -- how -- how to 4 express this parameter in the -- for the user 5 interface. I wouldn't say it's directly, because it's 6 in the spec. That's why I use it. 7 MR. WONG: Q. Well, you wouldn't call -- so 8 the IEEE has a priority 1 attribute; right? 9 A. Right. 10 Q. And it's a requirement of the PTP standard; 11 right? 12 A. Yes. 13 Q. Would you call the priority 1 standard 14 priority 2 in a command if the command sets the 15 priority 1 attribute? 16 MR. PAK: Objection; vague. 17 THE WITNESS: No. I would set it as 18 priority 1. 19 MR. WONG: Right. 20 THE WITNESS: Not priority 2. 21 MR. WONG: Q. And that's because you want 22 the command to match the same term that's used in the 23 standard; right? 24 MR. PAK: Objection; mischaracterizes the 25 witness' testimony.</p> <p style="text-align: right;">Page 150</p>	<p>1 standard attributes; right? 2 MR. PAK: Objection; assumes facts not in 3 evidence; mischaracterizes the witness' testimony. 4 THE WITNESS: I think I chose it based on my 5 understanding of the spec. And I don't remember using 6 it because it's in the spec. 7 MR. WONG: Q. But you had reviewed the spec 8 entirely before you started adding these five commands 9 associated with you in Exhibit 92; correct? 10 A. I did review the spec, yes. 11 Q. So you -- so you were aware that these terms 12 were defined in the IEEE specification marked as 13 Exhibit 93 before you added the five commands 14 associated with you in Exhibit 92; right? 15 MR. PAK: Objection; vague. 16 THE WITNESS: When you say "five commands," 17 that would include the show command which are 18 different, right, than these configuration commands? 19 MR. WONG: Sure. 20 Q. Why don't we just limit the question then to 21 the three commands that we just were talking about: 22 "PTP priority 1" -- 23 A. Right. 24 Q. -- "PTP priority 2," and "PTP sync interval." 25 A. Right.</p> <p style="text-align: right;">Page 152</p>
<p>1 MR. WONG: Let me rephrase the question. 2 Q. For a command "PTP priority 1" that sets an 3 attribute that's called priority 1 in the spec, you 4 should use the same word in the command; correct? 5 MR. PAK: Objection; assumes facts not in 6 evidence. 7 THE WITNESS: No, I don't think that part was 8 true. 9 For example, you could use clock priority 1 10 or clock priority 2; right? There -- there is no 11 direct association of what I use in the command line 12 CLI that it has to match this spec. That's the -- 13 that -- they are not equal. 14 MR. WONG: Okay. 15 Q. Well, priority 1 has a particular meaning in 16 the PTP context; correct? 17 A. Yes. 18 Q. And the "PTP priority 1" command performs the 19 function in the PTP context; correct? 20 MR. PAK: Objection; vague; incomplete 21 hypothetical. 22 THE WITNESS: The -- yes, priority attribute 23 is an important part of a PTP clock. 24 MR. WONG: Q. And you chose commands that 25 would be clear to a user trying to set these industry</p> <p style="text-align: right;">Page 151</p>	<p>1 Q. You were aware that the terms priority 1, 2 priority 2, sync interval, and PTP were defined in the 3 IEEE specification marked as Exhibit 93 before you 4 added those three commands to Cisco's routing 5 software; correct? 6 A. I'm aware of those terms being defined in the 7 1588 standard. 8 Q. Okay. Before you added those three commands 9 to the Cisco software; correct? 10 A. Yes. 11 Q. Okay. Now, "show PTP clock" is another 12 command that you're associated with; correct? 13 A. Yes. 14 Q. What's the function performed by the "show 15 PTP clock" command? 16 A. It shows the state and status of the clock. 17 And I don't recall the entire output from the command, 18 but I think that's probably summarize majority of the 19 output. 20 Q. Okay. And as we discussed earlier in today's 21 deposition, the PTP IEEE specification defines the 22 term clock; correct? 23 A. It defined the term clock, yes. 24 Q. Okay. And the clock that is referred to in 25 the command "show PTP clock" is the clock that is</p> <p style="text-align: right;">Page 153</p>

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<p>1 defined in the PTP standard; correct?</p> <p>2 MR. PAK: Objection; vague.</p> <p>3 THE WITNESS: Well, the command shows the PTP</p> <p>4 clock status.</p> <p>5 MR. WONG: Q. And when you refer to "the PTP</p> <p>6 clock" in that response you just gave, you're</p> <p>7 referring to the clock that is defined in the PTP</p> <p>8 standard; correct?</p> <p>9 A Yes, it means the clock.</p> <p>10 Q Now, the -- the word "show" in that command,</p> <p>11 were there other commands in iOS that used the word</p> <p>12 "show" before you added this "show PTP clock" command</p> <p>13 to the software?</p> <p>14 A Yes.</p> <p>15 Q Okay. You were familiar that other commands</p> <p>16 used the first word of "show" to display information</p> <p>17 before you added the "show PTP clock" command;</p> <p>18 correct?</p> <p>19 A Yes.</p> <p>20 Q Okay. So you -- you simply followed what</p> <p>21 other commands were doing when you chose the word</p> <p>22 "show" in "show PTP clock"; is that right?</p> <p>23 MR. PAK: Objection; assumes facts not in</p> <p>24 evidence; mischaracterizes the witness' testimony.</p> <p>25 MR. WONG: Q. If anything that I'm saying --</p> <p style="text-align: right;">Page 154</p>	<p>1 standards?</p> <p>2 A Yes.</p> <p>3 Q And you recall discussing the definition of</p> <p>4 parent clock in the standards earlier in this</p> <p>5 deposition; correct?</p> <p>6 A Yes.</p> <p>7 Q And another shorthand used by the IEEE</p> <p>8 standard for parent clock is simply parent; correct?</p> <p>9 MR. PAK: Objection; vague.</p> <p>10 THE WITNESS: Can you refer me to that page.</p> <p>11 MR. WONG: Sure, sure, absolutely.</p> <p>12 Q I think it's on page 53 of Exhibit 93. It's</p> <p>13 in that sentence maybe two-thirds of the way down on</p> <p>14 page 53 that starts with:</p> <p>15 "Ordinary and boundary clocks may keep</p> <p>16 statistics."</p> <p>17 A Uh-huh.</p> <p>18 "Using the following attribute."</p> <p>19 Okay.</p> <p>20 Q So you would agree that, in the IEEE</p> <p>21 standard, it uses the term parent as shorthand for</p> <p>22 parent clock?</p> <p>23 A Yes.</p> <p>24 Q Okay. Do you know if commands that use the</p> <p>25 word "show" were used before they were used in Cisco's</p> <p style="text-align: right;">Page 156</p>
<p>1 A "Show" is a --</p> <p>2 Q Sorry.</p> <p>3 A -- big category of commands. Like, there is</p> <p>4 debug. There is config. There is show. So show is</p> <p>5 one big category of commands.</p> <p>6 Q And there was a big -- and that category of</p> <p>7 commands, the show commands, existed before you added</p> <p>8 the "show PTP clock" command to the software; correct?</p> <p>9 A Yes.</p> <p>10 Q And you were just building upon that category</p> <p>11 of commands when you used the word "show" in "show PTP</p> <p>12 clock"; correct?</p> <p>13 MR. PAK: Objection; mischaracterizes the</p> <p>14 witness' testimony.</p> <p>15 THE WITNESS: Yes, I think that -- that was</p> <p>16 the intention.</p> <p>17 MR. WONG: Q. And is the same</p> <p>18 explanation -- does the same explanation apply to</p> <p>19 "show PTP parent" for the show aspect of that command?</p> <p>20 A Yes, for the show aspect of the command, yes.</p> <p>21 Q Okay. What function does the "show PTP</p> <p>22 parent" command perform?</p> <p>23 A It shows the status of the parent clock.</p> <p>24 Q When you say "the parent clock," are you</p> <p>25 referring to the parent clock as defined in the PTP</p> <p style="text-align: right;">Page 155</p>	<p>1 software?</p> <p>2 MR. PAK: Objection; calls for expert</p> <p>3 testimony.</p> <p>4 THE WITNESS: I'm not aware of that.</p> <p>5 MR. WONG: Okay.</p> <p>6 Q I'm just asking whether you personally know.</p> <p>7 If you don't, then --</p> <p>8 A No, I don't.</p> <p>9 Q -- that's fine.</p> <p>10 MR. WONG: What's the next exhibit number?</p> <p>11 THE REPORTER: 98.</p> <p>12 MR. WONG: Okay.</p> <p>13 (Document marked Exhibit 98</p> <p>14 for identification.)</p> <p>15 MR. WONG: The court reporter has marked as</p> <p>16 Exhibit 98 a document bearing control</p> <p>17 Nos. CSI-CLI-00194055 to '194800.</p> <p>18 Q Ms. Liu, do you recognize this document?</p> <p>19 A I don't recognize this document.</p> <p>20 Q Okay. Have you seen Cisco command reference</p> <p>21 guides before?</p> <p>22 A In general terms, right, not particular to</p> <p>23 700 series?</p> <p>24 Q That's -- that's correct, in general terms.</p> <p>25 A Yes, I have.</p> <p style="text-align: right;">Page 157</p>

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<p>1 J U R A T</p> <p>2</p> <p>3 I, TONG LIU, do hereby certify under penalty</p> <p>4 of perjury, that I have read the foregoing</p> <p>5 transcript of my deposition in the matter of</p> <p>6 Cisco Systems, Inc., vs. Arista Networks, Inc.,</p> <p>7 taken on January 15, 2016; that I have made such</p> <p>8 corrections as appear noted herein in ink,</p> <p>9 initialed by me; that my testimony as contained</p> <p>10 herein, as corrected, is true and correct.</p> <p>11 DATED this ____ day of _____,</p> <p>12 2015, at _____.</p> <p>13 _____</p> <p>14 SIGNATURE OF WITNESS</p> <p>15</p> <p>16 NOTARIZATION (If Required)</p> <p>17 State of _____</p> <p>18 County of _____</p> <p>19 Subscribed and sworn to (or affirmed) before me on</p> <p>20 this ____ day of _____, 20____,</p> <p>21 by _____, proved to me on the</p> <p>22 basis of satisfactory evidence to be the person who</p> <p>23 appeared before me.</p> <p>24 Signature: _____ (Seal)</p> <p>25</p> <p style="text-align: right;">Page 214</p>	
<p>1 CERTIFICATE OF REPORTER</p> <p>2 I, ANDREA M. IGNACIO, hereby certify that the</p> <p>3 witness in the foregoing deposition was by me duly</p> <p>4 sworn to tell the truth, the whole truth, and nothing</p> <p>5 but the truth in the within-entitled cause;</p> <p>6 That said deposition was taken in shorthand</p> <p>7 by me, a disinterested person, at the time and place</p> <p>8 therein stated, and that the testimony of the said</p> <p>9 witness was thereafter reduced to typewriting, by</p> <p>10 computer, under my direction and supervision;</p> <p>11 That before completion of the deposition,</p> <p>12 review of the transcript [x] was [] was not</p> <p>13 requested. If requested, any changes made by the</p> <p>14 deponent (and provided to the reporter) during the</p> <p>15 period allowed are appended hereto.</p> <p>16 I further certify that I am not of counsel or</p> <p>17 attorney for either or any of the parties to the said</p> <p>18 deposition, nor in any way interested in the event of</p> <p>19 this cause, and that I am not related to any of the</p> <p>20 parties thereto.</p> <p>21 Dated: 01/29/2016</p> <p>22</p> <p>23 </p> <p>24 ANDREA M. IGNACIO,</p> <p>25 RPR, CRR, CCRR, CLR, CSR No. 9830</p> <p style="text-align: right;">Page 215</p>	

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

CISCO SYSTEMS, INC.,)
)
 Plaintiff,)
) Case No.
 vs.) 5:14-cv-05344-BLF (PSG)
)
ARISTA NETWORKS, INC.,)
)
 Defendant.)
)

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VIDEOTAPED DEPOSITION OF KIRK LOUGHEED
Palo Alto, California
Friday, November 20, 2015
Volume I

Reported by:
CARLA SOARES
CSR No. 5908
Job No. 2187110
Pages 1 - 189

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<p>1 UNITED STATES DISTRICT COURT 2 NORTHERN DISTRICT OF CALIFORNIA 3 SAN JOSE DIVISION 4 5 CISCO SYSTEMS, INC.,) 6) 7 Plaintiff,) 8) Case No. 9 vs.) 5:14-cv-05344-BLF (PSG) 10) 11 ARISTA NETWORKS, INC.,) 12) 13 Defendant.) 14 _____) 15 16 17 18 19 20 21 22 23 24 25</p> <p>VIDEOTAPED DEPOSITION OF KIRK LOUGHEED, Volume I, taken on behalf of Defendant, at 650 Page Mill Road, Palo Alto, California, beginning at 9:19 a.m., and ending at 6:15 p.m., on Friday, November 20, 2015, before CARLA SOARES, Certified Shorthand Reporter No. 5908.</p>	<p>1 APPEARANCES (Continued): 2 3 For the Defendant: 4 KEKER & VAN NEST LLP 5 BY: BRIAN L. FERRALL, Attorney at Law 6 BY: RYAN WONG, Attorney at Law 7 633 Battery Street 8 San Francisco, California 94111 9 415.391.5400 10 bferrall@kvn.com 11 rwong@kvn.com 12 13 ALSO PRESENT: Sean Grant, Video Operator 14 --o0o-- 15 16 17 18 19 20 21 22 23 24 25</p>
Page 2	Page 4
<p>1 APPEARANCES: 2 3 For the Plaintiff and the Witness: 4 QUINN EMANUEL URQUHART & SULLIVAN, LLP 5 BY: JOHN (JAY) NEUKOM, Attorney at Law 6 50 California Street, 22nd Floor 7 San Francisco, California 94111 8 415.875.6341 9 johnneukom@quinnemanuel.com 10 and 11 KIRKLAND & ELLIS LLP 12 BY: JOSHUA L. SIMMONS, Attorney at Law 13 601 Lexington Avenue 14 New York, New York 10022 15 212-446-4989 16 joshua.simmons@kirkland.com 17 18 19 20 21 22 23 24 25</p>	<p>1 INDEX 2 WITNESS 3 KIRK LOUGHEED EXAMINATION Volume I 4 5 BY MR. FERRALL 10 6 7 EXHIBITS 8 NUMBER DESCRIPTION PAGE 9 Exhibit 29 Document headed "Internet 73 10 Protocol," 11 Bates ARISTANDCA0031553 - 1601 12 13 Exhibit 30 Document headed "DoD Internet 73 14 Host Table Specification" 15 16 Exhibit 31 Document headed "An Ethernet 73 17 Address Resolution Protocol or 18 Converting Network Protocol 19 Addresses to 48.bit Ethernet 20 Address for Transmission on 21 Ethernet Hardware," 22 Bates ARISTANDCA0003130 - 1639 23 24 25</p>
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1	EXHIBITS		
2	NUMBER	DESCRIPTION	PAGE
3	Exhibit 32	Document headed "Address	85
4		Resolution Protocol (ARP) module	
5		for the Yeager gateway"	
6			
7	Exhibit 33	Email string, top email to Kirk	89
8		Lougheed and Paula Labloner from	
9		Mike Sanchez, dated 11-17-14,	
10		Bates CSI-CLI-01326834 - 6837	
11			
12	Exhibit 34	Email string, top email to Phillip	93
13		Remaker from Kirk Lougheed, dated	
14		3-30-10, Bates CSI-CLI-01317865 -	
15		7866	
16			
17	Exhibit 35	Email string, top email to Joe	100
18		Hielscher from Kirk Lougheed,	
19		dated 7-23-08,	
20		Bates CSI-CLI-01134849 - 4850	
21			
22	Exhibit 36	Document entitled "Stanford	101
23		Ethertip/Gateway User and	
24		Configuration Guide,"	
25		Bates CSI-CLI-01315523 - 5568	
			Page 6

1	EXHIBITS		
2	NUMBER	DESCRIPTION	PAGE
3	Exhibit 37	Document entitled "cisco Systems	106
4		AGS User Manual,"	
5		Bates CSI-CLI-00358166 - 8223	
6			
7	Exhibit 38	Email string, top email to Phillip	122
8		Remaker from Kirk Lougheed, dated	
9		12-11-08, Bates CSI-ANI-00043306 -	
10		3306.000001	
11			
12	Exhibit 39	Document entitled "Cisco's	152
13		Response to Arista's Interrogatory	
14		No. 16 Amended Exhibit D1 (IOS	
15		Release 11.0)"	
16			
17	Exhibit 40	Email to Craig Fox from Kirk	160
18		Lougheed, dated 3-6-96,	
19		Bates CSI-CLI-00746398	
20			
21	Exhibit 41	Document described as source	162
22		code file	
23			
24	Exhibit 42	Document described as code	177
25			
			Page 7

1	EXHIBITS		
2	NUMBER	DESCRIPTION	PAGE
3	Exhibit 43	Document entitled "DECbrouter 90	181
4		Products," Bates CSI-ANI-00081683 -	
5		1683.000344	
6			
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1	Palo Alto, California			08:37:04
2	Friday, November 20, 2015			
3	9:19 a.m.			
4				
5	P R O C E E D I N G S			08:37:10
6	THE VIDEO OPERATOR: Good morning. We're			
7	on the record. The time is 9:19 a.m., and the date			
8	is November 20th, 2015. This begins the videotaped			
9	deposition of Kirk Lougheed.			
10	My name is Sean Grant, here with our court			09:19:25
11	reporter, Carla Soares. We're here from Veritext			
12	Legal Solutions at the request of counsel for			
13	defendant.			
14	This deposition is being held at Wilson			
15	Sonsini in Palo Alto, California. The caption of			09:19:34
16	this case is Cisco Systems, Inc., versus Arista			
17	Networks, Inc., Case No. 5:14-CV-05344-BLF.			
18	Please note that audio- and			
19	video-recording will take place unless all parties			
20	have agreed to go off the record. Microphones are			09:19:54
21	sensitive and may pick up whispers, private			
22	conversations, or cellular interference.			
23	At this time, will counsel please identify			
24	themselves and state whom they represent.			
25	MR. FERRALL: Brian Ferrall of Keker &			09:20:06
				Page 9

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1 MR. FERRALL: Let's mark this as the next 15:26:35	1 message indicates that you are looking at an error 15:29:49
2 exhibit.	2 message. An ancient operating system called TOPS-20
3 (Exhibit 38 was marked for identification	3 used such a convention and I adopted it."
4 and is attached hereto.)	4 Do you see that?
5 BY MR. FERRALL: 15:26:37	5 A Yeah, I do see that. 15:29:59
6 Q Exhibit 38 is a set of emails between you	6 Q Why did you adopt a TOPS-20 convention?
7 and Mr. Remaker, among others. It bears control	7 A Of the possibilities that I had, that
8 numbers CSI-ANI-00043306.	8 seemed -- that seemed a reasonable -- to me, it
9 A Okay. I'd like to read this.	9 seemed like a reasonable way of doing things.
10 Q First let me ask you the question so you 15:27:19	10 Q Did you get permission from Digital 15:30:32
11 know what to look for.	11 Equipment Company to use that convention?
12 A I will forget the question by the time I'm	12 MR. NEUKOM: Objection. Calls for a legal
13 done reading this.	13 conclusion and misstates prior testimony.
14 Q Well, Mr. Lougheed, that's not the way it	14 THE WITNESS: No, I did not seek
15 works, actually. I ask the question and you answer 15:27:28	15 permission. 15:30:55
16 it.	16 BY MR. FERRALL:
17 A Okay.	17 Q Have you ever heard of the acronym RIP in
18 Q If you can't answer it, then you tell me.	18 the context of networking?
19 My only question is, did you send the	19 A It typically means routing information
20 email that's at the top of Exhibit 38, the one at 15:27:38	20 protocol. 15:31:18
21 12-11-2008 at 10:14 p.m.?	21 Q You're familiar with that protocol?
22 MR. NEUKOM: Mischaracterizes the document	22 A It's been a while, but yes, I'm familiar
23 on its face.	23 with it.
24 And I know that Mr. Ferrall would like you	24 Q Did you make up the acronym RIP for
25 to feel comfortable to read the page-and-a-half 15:27:54	25 routing information protocol? 15:31:32
Page 122	Page 124
1 document that he's just put in front of you before 15:27:57	1 A No, I did not make up that acronym. 15:31:37
2 answering his question.	2 Q Did you make up the term "routing
3 THE WITNESS: Okay. I'll read it.	3 information protocol"?
4 MR. FERRALL: Actually, no, I would like	4 A No.
5 him to answer the question. 15:28:03	5 Q Did you submit an RFC for the routing 15:31:51
6 Q Are you telling me you can't tell me	6 information protocol?
7 whether you sent the email?	7 A No.
8 MR. NEUKOM: It's a totally unfair	8 Q Do you know who did?
9 question. The email that he sent would necessarily	9 A No, I don't know who did.
10 include everything that follows. 15:28:10	10 Q Did you ever ask permission from the 15:32:25
11 If you want him to tell you whether he	11 person who made up the term "RIP" for permission to
12 remembers this or whether he sent it, let him read	12 use it, to use that term?
13 the document. Come on, Brian.	13 MR. NEUKOM: Objection. Foundation,
14 It's a page and a half. We're not talking	14 vague, and calls for a legal conclusion.
15 about him wasting 30 minutes to read a product 15:28:20	15 THE WITNESS: There was no one whose 15:32:50
16 manual. It's a page-and-a-half email. The witness	16 permission one could ask.
17 has said he wants to read it, and we're going to let	17 BY MR. FERRALL:
18 him read it.	18 Q Well, I'll tell you, a Mr. Charles Hedrick
19 THE WITNESS: Okay. I've read it.	19 at Rutgers submitted what I believe to be the first
20 BY MR. FERRALL: 15:29:28	20 RFC on the routing information protocol. 15:33:05
21 Q Okay. Did you send this email that's	21 Do you know Mr. Hedrick?
22 dated December 11, 2008, at 10:14 p.m.?	22 A I do.
23 A I believe I did.	23 Q Did you ever ask him for permission to use
24 Q Okay. And in the last paragraph of that	24 the term "RIP"?
25 email, you write, "The percent sign leading a 15:29:41	25 MR. NEUKOM: Objection. Asked and 15:33:15
Page 123	Page 125

32 (Pages 122 - 125)

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1 interface, and it would -- as a packet that was	16:12:12	1 the like, or "database lookup" or...	16:16:59
2 being sent -- sent out that interface, it could		2 BY MR. FERRALL:	
3 either be permitted or denied going through that		3 Q Did you coin the term "domain lookup"?	
4 interface.		4 A I decided to use that as a command	
5 Those were the two original uses of the	16:12:29	5 expression within the software, yes.	16:17:21
6 "access list" command expression.		6 Q I'll ask the question one more time. I'm	
7 Q Do you believe that you coined the term		7 asking you if you coined the term "domain lookup."	
8 "access list"?		8 MR. NEUKOM: Objection. Asked and	
9 A It was my choice to use that description.		9 answered and vague.	
10 Q Well, I'm asking you if you coined that	16:12:56	10 THE WITNESS: I did not.	16:17:43
11 term, or had you ever heard that term before in the		11 BY MR. FERRALL:	
12 context of networking?		12 Q Do you know who did?	
13 MR. NEUKOM: Objection. Vague, compound,		13 A No idea.	
14 asked and answered.		14 Q When was -- to your knowledge, when was	
15 THE WITNESS: I do not believe that I had	16:13:13	15 the term "routing" ever used in conjunction with the	16:18:41
16 heard the term before.		16 Internet protocol?	
17 BY MR. FERRALL:		17 MR. NEUKOM: Objection. Vague and	
18 Q Had you heard the term "IP access group"		18 foundation.	
19 before?		19 THE WITNESS: I don't know when the term	
20 A Yes.	16:13:25	20 "routing" was used.	16:19:05
21 Q Who coined that term, to your knowledge,		21 BY MR. FERRALL:	
22 do you know?		22 Q Were people in the field talking about	
23 A I did.		23 routing in connection with IP before you joined	
24 Q Under what circumstances? Or for what		24 Cisco?	
25 purpose, I should say?	16:13:39	25 MR. NEUKOM: Objection. Vague, compound.	16:19:24
Page 142		Page 144	
1 A I don't remember the exact details, but it	16:13:52	1 THE WITNESS: Yes.	16:19:27
2 is -- either assigns an access list to an interface		2 BY MR. FERRALL:	
3 or -- I think it assigns an interface to a -- an		3 Q Tell me what, if anything, was creative	
4 access list to an interface. I believe it's access		4 about your decision to use the term "IP routing" as	
5 class or something like that that assigns it to an	16:14:07	5 a CLI command.	16:19:51
6 interface or to a line number.		6 MR. NEUKOM: Objection. Calls for opinion	
7 Q The term "domain name" is not a term that		7 testimony.	
8 you made up, is it?		8 THE WITNESS: At Stanford where we had	
9 A No, I didn't make -- I -- no, I did not.		9 terminal servers and gateways in the same software,	
10 Q "Domain name" is a term that goes back to	16:15:38	10 there were times when it was convenient -- just	16:20:26
11 the ARPANET, actually. Are you aware of that?		11 because something had multiple interfaces, it could	
12 MR. NEUKOM: Objection. Foundation.		12 still perhaps be a terminal server. So I needed a	
13 THE WITNESS: I would be unsurprised if it		13 way of turning off, disabling routing functionality.	
14 went back that far.		14 And I used the command -- I chose the	
15 Are you referring to ARPANET protocols or	16:16:02	15 keyword -- configuration keyword command expression	16:21:07
16 ARPANET network?		16 "routing." Then "no routing" would turn off routing	
17 BY MR. FERRALL:		17 functionality in whatever software was running at	
18 Q The ARPANET network.		18 the time despite its hardware configuration.	
19 A I believe the concept was introduced while		19 And then later on at Cisco, to keep the --	
20 the ARPANET network was still running.	16:16:15	20 keep the form of the hierarchy of commands, we added	16:21:35
21 Q What about the words "domain lookup"? Did		21 the -- we added our choice of -- we added "IP" in	
22 you coin that term "domain lookup"?		22 front of it because you could potentially turn off	
23 MR. NEUKOM: Objection. Vague.		23 other sorts of routing, or at least that was the --	
24 THE WITNESS: It's a parallel construction		24 that was the -- that was a possibility for other	
25 to terms like "address lookup" or "host lookup" or	16:16:52	25 network protocols.	16:22:02
Page 143		Page 145	

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1 BY MR. FERRALL: 17:55:19	1 interior routing protocols. And customer networks, 17:59:19
2 Q Mr. Lougheed, this is a document that	2 especially in the early days when they were attached
3 appears to be your work, according to the copyright	3 to the -- they had campus networks running one
4 notice on the front.	4 routing protocol, they'd be attached to the NSFNET
5 Do you see that? 17:55:29	5 backbone as well running a different routing 17:59:39
6 A Yes, I see that.	6 protocol.
7 Q Okay. Do you know when -- do you	7 And since routing protocols would give
8 recognize it?	8 incommensurate metrics, metrics that could not be
9 A Yes, I do.	9 compared, I developed a concept of distance that
10 Q What is it? 17:55:36	10 says if one routing protocol says it knows a route 18:00:08
11 A It's a file called "globs.h." It is	11 to one destination and another routing protocol says
12 declaring a set of variables that are used in the	12 it knows a route to that same destination, which --
13 software.	13 the routing protocol with the smallest
14 Q And when did you compose what's	14 administrative distance would be the one that would
15 Exhibit 42? 17:56:02	15 be entered into the routing table. 18:00:24
16 A Is there a question?	16 And so that was the problem, and my
17 Q Yes. I asked when did you compose	17 solution was the administrative distance mechanism
18 Exhibit 42?	18 that I described.
19 A Apparently June of 1985.	19 And when I implemented BGP, that was a
20 Q And you were employed by Stanford at that 17:56:28	20 natural extension to include for BGP as well to be 18:00:49
21 time, right?	21 able to configure an administrative distance to
22 A Correct.	22 determine the believability of BGP.
23 Q We had talked earlier about the ARP,	23 If no routing protocol -- if only one
24 address resolution protocol.	24 routing protocol knew the destination, you would
25 Do you remember that? 17:56:57	25 believe that. If there are two or more, 18:01:10
Page 178	Page 180
1 A Yes. 17:56:58	1 administrative distance was the tie-breaker. 18:01:16
2 Q Okay.	2 Q Sorry. I'm going to jump back to ARP.
3 A I remember you asked questions about that.	3 There's a term you use associated with
4 Q Are you familiar with there being a	4 ARP, "ARP cache." We talked about that earlier in
5 provision for time-outs in the ARP protocol? 17:57:15	5 looking at one of the "clear" commands, right? 18:01:52
6 MR. NEUKOM: Objection. Vague and	6 Where did the term "ARP cache" come from?
7 compound.	7 A The cache is a -- logically a list of
8 THE WITNESS: There is the -- ARP entries	8 items. An ARP cache would be a list of ARP requests
9 can become stale. If you unplug the computer or you	9 that have been satisfied, including their MAC
10 move the computer somewhere else or you replace the 17:57:43	10 addresses and how long since the last time we'd seen 18:02:37
11 network interface, entries will become stale.	11 a -- the router had seen an ARP request go by for
12 Implementing a time-out is a way of making sure the	12 that particular source address.
13 cache isn't stale.	13 That sort of computer science concept of a
14 BY MR. FERRALL:	14 cache is found all over.
15 Q Are you aware of there being a provision 17:58:10	15 Q One of the commands that is indicated that 18:03:14
16 for time-outs in the RFC for ARP?	16 you authored is the command "boot system."
17 MR. NEUKOM: Objection. Vague and	17 Had you ever heard someone use the words
18 compound, asked and answered.	18 "boot system" together before you joined Cisco?
19 THE WITNESS: I'm not -- I don't remember	19 MR. NEUKOM: Objection. Vague.
20 such language right now. 17:58:38	20 THE WITNESS: I had heard phrases like 18:03:45
21 BY MR. FERRALL:	21 "boot the system up," "reboot the system," "reload
22 Q Did you create the term "distance BGP"?	22 the system," "start the system," "restart the
23 A Yes.	23 system."
24 Q How did you come up with that term?	24 (Exhibit 43 was marked for identification
25 A The Cisco IOS started supporting multiple 17:59:11	25 and is attached hereto.) 16:48:10
Page 179	Page 181

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1 Q How did you choose the term -- the words 18:13:39	1
2 "timers basic" for this function?	2
3 A I don't remember where "basic" came from.	3
4 But using the keyword "timers" was my -- was my	4
5 introduction, was my creation. 18:14:00	5
6 MR. NEUKOM: Counsel, I believe we're now	6
7 beyond seven hours.	7
8 MR. FERRALL: Okay. Well, I -- given	8 I, KIRK LOUGHEED, do hereby declare under
9 Mr. Lougheed's tenure at Cisco, I thank him for his	9 penalty of perjury that I have read the foregoing
10 time, but I will say I think we deserve some more 18:14:22	10 transcript; that I have made any corrections as
11 time with him.	11 appear noted, in ink, initialed by me, or attached
12 But I understand seven hours is up and	12 hereto; that my testimony as contained herein, as
13 you're going to say enough is enough for today I	13 corrected, is true and correct.
14 take it; is that right?	14 EXECUTED this _____ day of _____,
15 MR. NEUKOM: Certainly for today for the 18:14:31	15 2015, at _____,
16 sake of the witness. And we will respectfully	16 (City) (State)
17 disagree with the idea that counsel needs more than	17
18 seven hours --	18
19 MR. FERRALL: Okay.	19
20 MR. NEUKOM: -- needs more than today. 18:14:41	20 KIRK LOUGHEED
21 But we can discuss that for another day.	21
22 In the meantime, I should note for the	22
23 record the witness reserves the right to review the	23
24 transcript and make corrections.	24
25 Brian, I'm not sure I did that for 18:14:51	25
Page 186	Page 188
1 Mr. Tjong. If you're okay with it, I'd like to just 18:14:53	1 I, the undersigned, a Certified Shorthand
2 do a stipulation across the case that both sides	2 Reporter of the State of California, do hereby
3 have the 30-day review and errata right for all	3 certify:
4 transcripts regardless whether counsel puts it on	4 That the foregoing proceedings were taken
5 the record at the depo as a two-way street. 18:15:04	5 before me at the time and place herein set forth;
6 MR. FERRALL: That's fine. I thought it	6 that any witnesses in the foregoing proceedings,
7 existed as a matter of procedure anyway. So that's	7 prior to testifying, were administered an oath; that
8 fine.	8 a record of the proceedings was made by me using
9 MR. NEUKOM: I hope you're right, but glad	9 machine shorthand which was thereafter transcribed
10 to have the stipulation, even if it's unnecessary. 18:15:17	10 under my direction; that the foregoing transcript is
11 MR. FERRALL: Okay.	11 a true record of the testimony given.
12 MR. NEUKOM: Thanks very much.	12 Further, that if the foregoing pertains to
13 THE VIDEO OPERATOR: This concludes	13 the original transcript of a deposition in a Federal
14 today's videotaped deposition of Mr. Kirk Lougheed.	14 Case, before completion of the proceedings, review
15 We're off the record at 6:15 p.m. Thank you. 18:15:25	15 of the transcript [X] was [] was not requested.
16 (TIME NOTED: 6:15 p.m.)	16 I further certify I am neither financially
17 --o0o--	17 interested in the action nor a relative or employee
18	18 of any attorney or any party to this action.
19	19 IN WITNESS WHEREOF, I have this date
20	20 subscribed my name.
21	21
22	22 Dated: 11/25/2015
23	23
24	24 <i>Carla Soares</i>
25	25 CARLA SOARES
Page 187	CSR No. 5908
	Page 189

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

CISCO SYSTEMS, INC. Case No.: 5:14-cv-05344-BLF (PSG)

Plaintiff,

v.

ARISTA NETWORKS, INC.

Defendants.

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VIDEOTAPED DEPOSITION OF KIRK LOUGHEED

Palo Alto, California

Monday, April 4, 2016

Volume 2

Reported by:

LESLIE JOHNSON

RPR, CSR No. 11451

Job No.: 2285024

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1 UNITED STATES DISTRICT COURT	1 I N D E X
2 FOR THE NORTHERN DISTRICT OF CALIFORNIA	2
3 SAN JOSE DIVISION	3 WITNESS EXAMINATION
4	4 KIRK LOUGHEED
5 CISCO SYSTEMS, INC. Case No.: 5:14-cv-05344-BLF(PSG)	Volume 2
6 Plaintiff,	5
7 v.	6 BY MR. WONG 197
8 ARISTA NETWORKS, INC.	7
9 Defendants.	8 EXHIBITS
10	9 KIRK LOUGHEED
11	10 NUMBER DESCRIPTION PAGE
12	11 Exhibit 452 Copy of name badge; 1 page 198
13	12 Exhibit 453 Black and white copy of photograph; 198
14 * HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY *	1 page
15	13 Exhibit 454 Patent Agreement; Bates stamped 208
16	14 KL-00000872 to 891
17 VIDEOTAPED DEPOSITION OF KIRK LOUGHEED, Volume 2,	15 Exhibit 455 A Multiple Protocol Kernel for 228
18 taken on behalf of Defendant, at 601 California Avenue,	Local Area Network Software
19 Palo Alto, California, beginning at 9:25 a.m. and ending	16 Development Reference Manual; Bates
20 at 4:37 p.m., on Monday, April 4, 2016, before	stamped KL-00000001 to 93
21 LESLIE JOHNSON, Certified Shorthand Reporter No. 11451.	17 Exhibit 456 Document entitled "Chaosnet"; Bates 238
22	stamped KL-00000186 to 250
23	18 Exhibit 457 Document entitled "Debugging 241
24	Information"; Bates stamped
25	KL-00000564-654
	20 Exhibit 458 DECnet Digital Network Architecture 244
	(Phase V); Bates stamped
	KL-00000251 to 380
	22 Exhibit 459 E-mail from Stanford Low Overhead 252
	Timesharing; Bates stamped
	KL-00001699 to 763
	24
	25
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1 APPEARANCES:	1 EXHIBITS (Cont.)
2	2 KIRK LOUGHEED
3 FOR PLAINTIFF CISCO SYSTEMS, INC.:	3 NUMBER DESCRIPTION PAGE
4 QUINN EMANUEL URQUHART & SULLIVAN LLP	4 Exhibit 460 E-mail dated 10-Jan-83 from Barb 260
5 BY: JOHN (JAY) NEUKOM, ESQ.	at ISL to Computer Committee; Bates
6 50 California Street, 22nd Floor	stamped KL-00000868 to 871
7 San Francisco, California 94111	5 Exhibit 461 Stanford Ethernit/Gateway User and 263
8 (415)875-6600	Configuration Guide; Bates stamped
9 johnneukom@quinnemanuel.com	CSI-CLI-01315367 to 97
10 FOR DEFENDANT ARISTA NETWORKS, INC.:	7 Exhibit 462 Letter dated August 21, 1986 from 281
11 KEKER & VAN NEST LLP	Robert L. Street to Len Bosack;
12 BY: RYAN WONG, ESQ.	Bates stamped CSI-CLI-01839502
13 633 Battery Street	to 504
14 San Francisco, California 94111	10 Exhibit 463 E-mail dated 4/3/2006 from Kirk 298
15 (415)391-5400	Lougheed to Vivian Neou; Bates
16 rwong@kvn.com	stamped CSI-CLI-01124245
17 ALSO PRESENT:	12 Exhibit 464 Cisco's Amended Exhibit F; 44 pages 302
18 SEAN GRANT, Videographer	13 Exhibit 465 Software Unit External Functional 310
19	Specification; Bates stamped
20	CSI-CLI-00608751 to 752
21	15 Exhibit 466 ipsupport.c -- miscellaneous IP 328
22	support code; 20 pages
23	17 Exhibit 467 Document entitled "Part 3: Media 332
24	Access Control (MAC) Bridges";
25	Bates stamped ARISTANDCA00032440
	to 812
	19 Exhibit 468 Contents of "tip" directory; 1 page 348
	20 Exhibit 469 Commandl.c -- ASM/AGS commands; 355
	Bates stamped KL-SC-00000001 to 9
	22 Exhibit 470 Config.c -- parse and act upon 358
	configuration commands; Bates
	stamped KL-SC-00000010 to 20
	24 Exhibit 471 Exec.c -- ASM/AGS command level; 365
	Bates stamped KL-SC-00000021 to 32
	25
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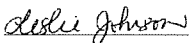
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<p>1 EXHIBITS (Cont.)</p> <p>2 KIRK LOUGHEED</p> <p>3 NUMBER DESCRIPTION PAGE</p> <p>4 Exhibit 472 "cisco.c" source code; 1 page 371</p> <p>5 Exhibit 473 "stanford.c" source code; 1 page 371</p> <p>6 Exhibit 474 Source code; Bates stamped 375</p> <p>KL-SC-00000033 to 41</p> <p>7</p> <p>Exhibit 475 Source code; Bates stamped 375</p> <p>8 KL-SC-00000042 to 52</p> <p>9 Exhibit 476 Cisco Systems ASM/AGS User Manual 383</p> <p>and Configuration Guide; Bates</p> <p>10 stamped CSI-CLI-00358622 to 54</p> <p>11 * * *</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 195</p>	<p>1 THE VIDEOGRAPHER: Thank you. Will the</p> <p>2 certified court reporter please swear in the</p> <p>3 witness.</p> <p>4</p> <p>5 KIRK LOUGHEED,</p> <p>6 having been administered an oath, was examined and</p> <p>7 testified as follows:</p> <p>8</p> <p>9 EXAMINATION (RESUMED)</p> <p>10 BY MR. WONG:</p> <p>11 Q. Good morning, Mr. Lougheed.</p> <p>12 A. Good morning.</p> <p>13 Q. Mr. Lougheed, do you understand that this</p> <p>14 is a continuation of your personal deposition that</p> <p>15 was taken back on November 20th, 2015?</p> <p>16 A. I do.</p> <p>17 Q. And do you understand that you are still</p> <p>18 testifying under oath as if you were testifying at</p> <p>19 trial?</p> <p>20 A. I do.</p> <p>21 Q. And is there any reason why you cannot</p> <p>22 give full and truthful testimony today?</p> <p>23 A. There is no reason.</p> <p>24 Q. And are you generally still familiar with</p> <p>25 the ground rules for a deposition?</p> <p style="text-align: right;">Page 197</p>
<p>1 Palo Alto, California, Monday, April 4, 2016</p> <p>2 9:25 a.m.</p> <p>3</p> <p>4 THE VIDEOGRAPHER: Good morning. We're on</p> <p>5 the record. The time is 9:25 a.m., and the date is</p> <p>6 April 4th, 2016. This begins Volume 2 of the</p> <p>7 videotaped deposition of Mr. Kirk Lougheed. My name</p> <p>8 is Sean Grant, here with our court reporter, Leslie</p> <p>9 Johnson. We're here from Veritext Legal Solutions</p> <p>10 at the request of counsel for Defendant. This</p> <p>11 deposition is being held at Wilson Sonsini in Palo</p> <p>12 Alto, California. The caption of this case is</p> <p>13 "Cisco Systems Inc. versus Arista Networks Inc.,"</p> <p>14 Case No. 5:14-cv-05344-BLF.</p> <p>15 Please note that audio and video recording</p> <p>16 will take place unless all parties have agreed to go</p> <p>17 off the record. Microphones are sensitive and may</p> <p>18 pick up whispers, private conversations or cellular</p> <p>19 interference.</p> <p>20 At this time, will counsel please identify</p> <p>21 themselves and state whom they represent.</p> <p>22 MR. WONG: Ryan Wong from Keker & Van Nest</p> <p>23 for Defendant Arista Networks.</p> <p>24 MR. NEUKOM: John Neukom for the plaintiff</p> <p>25 and also today for the witness.</p> <p style="text-align: right;">Page 196</p>	<p>1 A. Yes.</p> <p>2 Q. Okay. Well, I'll just repeat some of the</p> <p>3 more important rules. If you need to take a break</p> <p>4 at any time, just let me know. And all I'd ask is</p> <p>5 that if there is a question pending, that you answer</p> <p>6 it before we go on the break. Okay?</p> <p>7 A. (Witness nods head.)</p> <p>8 MR. WONG: Why don't we mark this as the</p> <p>9 first exhibit for today.</p> <p>10 (Exhibit 452 marked for identification.)</p> <p>11 MR. WONG: And we will mark this one as</p> <p>12 the next exhibit.</p> <p>13 (Exhibit 453 marked for identification.)</p> <p>14 MR. NEUKOM: Ryan, I have two separate</p> <p>15 pieces of paper. Are you treating these as two</p> <p>16 separate exhibits?</p> <p>17 MR. WONG: Yes. I'm going to give them</p> <p>18 two exhibit numbers and read them into the record in</p> <p>19 just a second.</p> <p>20 The court reporter has marked as</p> <p>21 Exhibit 452 a photocopy -- photo bearing Bates Nos.</p> <p>22 KL-00002202. The court reporter has also marked as</p> <p>23 Exhibit 453, a black and white photo with Bates Nos.</p> <p>24 KL-00002201.</p> <p>25 ////</p> <p style="text-align: right;">Page 198</p>

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<p>1 source code for the original "ip access-group" 2 command? 3 A. So writing it for that command would have 4 been part of writing the entire functionality of 5 putting access lists onto interfaces, I guess on the 6 order of a day. 7 Q. If you turn to page 20 on Exhibit 464. 8 Let me know when you're there. 9 A. Okay. I'm on page 20. 10 Q. The second to the top command is 11 "mac-address." 12 Do you see that? 13 A. Uh-huh. 14 Q. Are you the originator of the 15 "mac-address" command? 16 A. Yes. 17 Q. How do you know that you're the originator 18 of the "mac-address" command? 19 A. I remember the problem that I was solving 20 that I needed that sort of functionality. 21 Q. What was the problem that you were trying 22 to solve by the "mac-address" command? 23 A. I needed to send packets on a serial line 24 that actually -- which a serial line does not have 25 MAC addresses, but I needed to somehow get a MAC</p> <p style="text-align: right;">Page 319</p>	<p>1 But to your knowledge, MAC is an 2 industry-standard term defined either on OSI or the 3 IEEE? 4 MR. NEUKOM: Objection. Vague. Calls for 5 opinion. 6 BY MR. WONG: 7 Q. Correct? 8 A. I believe at least IEEE has used the term 9 "MAC address." 10 Q. And at the time that you added the 11 "mac-address" command to Cisco IOS, had the IEEE, to 12 your knowledge, already started using the term "MAC 13 address"? 14 A. Yes. 15 Q. How long did it take you -- strike that. 16 How long did it take you to come up with 17 the syntax for the "mac-address" command? 18 A. I don't remember how long. I suspect it 19 was less than a day. 20 Q. Why do you say that? 21 A. I tend to make decisions quickly. 22 Q. How long did it take you to write the 23 source code for the functionality associated with 24 the "mac-address" command? 25 A. It was probably the same day.</p> <p style="text-align: right;">Page 321</p>
<p>1 address associated with that particular serial line. 2 Q. Was that related to a client request? 3 A. Yes. I don't remember the exact customer 4 or the details to it. 5 Q. Do you remember if the customer suggested 6 you calling the command "mac-address"? 7 A. I don't remember if the customer suggested 8 anything in that particular -- in that particular 9 instance. 10 Q. And is the function of the "mac-address" 11 command to associate a MAC address with a particular 12 serial line? 13 A. It could be a serial line. It could be 14 actually any interface. It would depend what 15 protocols are running across the interface as to 16 what it would do. 17 Q. And what is -- strike that. 18 The MAC part of the words "mac-address," 19 that refers to media access control, correct? 20 A. Yes. 21 Q. And we talked about that media access 22 control being a layer defined by OSI, correct? 23 A. I think we were wondering whether it was 24 OSI or IEEE. 25 Q. Thank you.</p> <p style="text-align: right;">Page 320</p>	<p>1 Q. Did you ever consider a command syntax 2 without the hyphen between "mac" and "address"? 3 A. Stylistically, I prefer dashes as opposed 4 to cramming the words together. I like commands 5 that have an English-like flavor to them. And I 6 detest periods in commands and underscores. So this 7 was . . . 8 Q. Did you ever consider two -- let me strike 9 that. 10 Do you know what a token is in the context 11 of a command? 12 A. Yes. 13 Q. Did you ever consider a command syntax of 14 "mac address"? 15 A. I don't recall if I did. 16 Q. What impact would it have, if any, on the 17 user if -- strike that. 18 Would the CLI behave differently if the 19 command was "mac address," as opposed to 20 "mac-address"? 21 MR. NEUKOM: Objection. Hypothetical 22 question. 23 THE WITNESS: Well, it behaves differently 24 in that instead of one token, there's two tokens. 25 So there would be that.</p> <p style="text-align: right;">Page 322</p>

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<p>1 REPORTER'S CERTIFICATION</p> <p>2 I, Leslie Johnson, a Certified Shorthand</p> <p>3 Reporter of the State of California, do hereby certify:</p> <p>4 That the foregoing proceedings were taken</p> <p>5 before me at the time and place herein set forth; that</p> <p>6 any witnesses in the foregoing proceedings, prior to</p> <p>7 testifying, were administered an oath; that a record of</p> <p>8 the proceedings was made by me using machine shorthand</p> <p>9 which was thereafter transcribed under my direction;</p> <p>10 that the foregoing transcript is a true record of the</p> <p>11 testimony given.</p> <p>12 Further, that if the foregoing pertains to</p> <p>13 the original transcript of a deposition in a Federal</p> <p>14 Case, before completion of the proceedings, review</p> <p>15 of the transcript [] was [] was not requested.</p> <p>16 I further certify I am neither financially interested in</p> <p>17 the action nor a relative or employee of any attorney or</p> <p>18 any party to this action.</p> <p>19 IN WITNESS WHEREOF, I have this date</p> <p>20 subscribed my name.</p> <p>21 Dated: April 19, 2016</p> <p>22</p> <p>23 </p> <p>24 LESLIE JOHNSON</p> <p>25 CSR No. 11451, RPR, CCRR</p> <p>Page 399</p>	

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1 UNITED STATES DISTRICT COURT
2 FOR THE NORTHERN DISTRICT OF CALIFORNIA
3
4

5 _____
6 CISCO SYSTEMS, INC.,)
7 Plaintiff,)
8 vs.) Civil Action No.:
9 ARISTA NETWORKS, INC.,) 5:14-cv-05344-BLF (PSG)
10 Defendant.)
11 _____)

12 CONFIDENTIAL

13
14 VIDEOTAPED DEPOSITION OF DEVADAS PATIL
15 Palo Alto, California
16 Sunday, February 21, 2016
17 Volume 1
18
19
20

21 Reported by:

22 RACHEL FERRIER, CSR No. 6948

23 Job No. 2223126
24

25 PAGES 1 - 234

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7 vs.)Civil Action No.:	7 BY MR. CANNON 217
8 ARISTA NETWORKS, INC.,)5:14-cv-05344-BLF(PSG)	8
9 Defendant.)	9
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11	11 INSTRUCTION NOT TO ANSWER
12	12 Page Line
13	13 2
14 VIDEOTAPED DEPOSITION OF DEVADAS PATIL, VOLUME 1,	14
15 taken on behalf of the Defendant, at Wilson Sonsini	15
16 Goodrich & Rosati, 650 Page Mill Road, Palo Alto,	16
17 California, beginning at 9:25 a.m. and ending at	17
18 3:44 p.m. on Sunday, February 21, 2016, before	18
19 RACHEL FERRIER, Certified Shorthand Reporter No. 6948.	19
20	20
21	21
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2	2 NUMBER DESCRIPTION PAGE
3 For Plaintiff:	3
4 KEKER & VAN NEST LLP	4 Exhibit 310 Subpoena to Testify at a
5 BY: RYAN WONG	5 Deposition in a Civil
6 Attorney at Law	6 Action to Devadas Patil 21
7 633 Battery Street	7 Exhibit 311 Letter dated 2/19/16 to
8 San Francisco, CA 94111	8 Devadas Patil from Sean Park 22
9 415.773.6682	9 Exhibit 312 Resume for Devadas Patil 29
10 rwong@kvn.com	10 Exhibit 313 Resume for Devadas Patil
11	11 (Bates CSI-CLI-01611242 -
12 For Defendant:	12 01611243) 49
13 QUINN EMANUEL URQUHART & SULLIVAN, LLP	13 Exhibit 314 "Business Development Trends and
14 BY: MATTHEW D. CANNON	14 Analysis for the Data Networking
15 Attorney at Law	15 Market" by Devadas Patil 107
16 50 California Street, 22nd Floor	16 Exhibit 315 IEEE 802.1AB Standard for
17 San Francisco, CA 94111	17 local and metropolitan
18 415.875.6412	18 area networks
19 matthewcannon@quinnemanuel.com	19 (Bates ARISTANDCA00017907
20	20 - 18078) 117
21	21 Exhibit 316 Spreadsheet entitled
22 Videographer:	22 "Corrected Information
23 SOSEH KEVORKIAN	23 Regarding Cisco Command
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<p>1 EXHIBITS</p> <p>2 NUMBER DESCRIPTION PAGE</p> <p>3</p> <p>4 Exhibit 318 Parser-Police Manifest,</p> <p>5 Version 5 165</p> <p>6 Exhibit 319 E-mail dated 10/10/07</p> <p>7 from Devadas Patil</p> <p>8 (Bates CSI-CLI-00836482) 176</p> <p>9 Exhibit 320 E-mail chain dated 8/10/06</p> <p>10 from Devadas Patil</p> <p>11 (Bates CSI-CLI-00817320 180</p> <p>12 Exhibit 321 E-mail chain dated 8/21/06</p> <p>13 from Devadas Patil</p> <p>14 (Bates CSI-CLI-0817660) 183</p> <p>15 Exhibit 322 Cisco IOS Carrier Ethernet</p> <p>16 Command Reference</p> <p>17 (Bates CSI-CLI-00291752 191</p> <p>18 Exhibit 323 E-mail chain dated 1/5/06</p> <p>19 from Devadas Patil</p> <p>20 (Bates CSI-CLI-00810826 208</p> <p>21 Exhibit 324 E-mail chain dated 2/1/06</p> <p>22 from Devadas Patil</p> <p>23 (Bates CSI-CLI-00811125 212</p> <p>24 - 811128)</p> <p>25</p> <p style="text-align: right;">Page 6</p>	<p>1 MR. CANNON: Matthew Cannon from Quinn, Emanuel 09:26AM</p> <p>2 on behalf of Plaintiff Cisco and the witness. 09:26AM</p> <p>3 THE VIDEOGRAPHER: Thank you. 09:26AM</p> <p>4 DEVADAS PATIL, 09:26AM</p> <p>5 having been administered an oath, was examined and 09:26AM</p> <p>6 testified as follows: 09:26AM</p> <p>7 EXAMINATION 09:26AM</p> <p>8 BY MR. WONG: 09:26AM</p> <p>9 Q Good morning. 09:26AM</p> <p>10 A Morning. 09:26AM</p> <p>11 Q Please state your full name for the record. 09:26AM</p> <p>12 A Devadas Patil. 09:26AM</p> <p>13 Q And, Mr. Patil, what is your home address? 09:26AM</p> <p>14 A 3137 Kittery Avenue in San Ramon, California 09:26AM</p> <p>15 94583. 09:26AM</p> <p>16 Q And who is your current employer, Mr. Patil? 09:26AM</p> <p>17 A GE Digital. 09:27AM</p> <p>18 Q Do you have a work e-mail address for GE Digital? 09:27AM</p> <p>19 A I do. 09:27AM</p> <p>20 Q Could you please state it for the record. 09:27AM</p> <p>21 A It is devadas.patil@ge.com. 09:27AM</p> <p>22 Q Do you have any personal e-mail addresses that 09:27AM</p> <p>23 you use, Mr. Patil? 09:27AM</p> <p>24 A I do. 09:27AM</p> <p>25 Q Could you please state those for the record. 09:27AM</p> <p style="text-align: right;">Page 8</p>
<p>1 Palo Alto, California; Sunday, February 21, 2016</p> <p>2 9:25 a.m.</p> <p>3</p> <p>4 THE VIDEOGRAPHER: Good morning. 09:25AM</p> <p>5 THE WITNESS: Morning. 09:25AM</p> <p>6 THE VIDEOGRAPHER: We are on the record at 09:25AM</p> <p>7 9:25 a.m. on February 21st, 2016. 09:25AM</p> <p>8 This is the video-recorded deposition of Devadas 09:25AM</p> <p>9 Patil. 09:25AM</p> <p>10 My name is Soseh Kevorkian, here with our Court 09:25AM</p> <p>11 Reporter, Rachel Ferrier. We are here on behalf of 09:25AM</p> <p>12 Defendants at 650 Page Mill Road in Palo Alto, 09:25AM</p> <p>13 The caption of this case is Cisco Systems, 09:25AM</p> <p>14 Incorporated, versus Arista Networks, Incorporated, Case 09:25AM</p> <p>15 No. 5:14-cv-05344- BLF(PSG). 09:25AM</p> <p>16 Please note that audio and video recording will 09:25AM</p> <p>17 take place unless all parties agree to go off the 09:26AM</p> <p>18 record. 09:26AM</p> <p>19 Microphones are sensitive. They pick up 09:26AM</p> <p>20 whispers, private conversations, and all cellular 09:26AM</p> <p>21 interference. 09:26AM</p> <p>22 At this time, would counsel and all present 09:26AM</p> <p>23 please identify themselves for the record. 09:26AM</p> <p>24 MR. WONG: Ryan Wong from Keker & Van Nest for 09:26AM</p> <p>25 Defendant Arista Networks. 09:26AM</p> <p style="text-align: right;">Page 7</p>	<p>1 A Dpatil44@hotmail.com. 09:27AM</p> <p>2 Q Anything else? 09:27AM</p> <p>3 A That's the only one I do use. 09:27AM</p> <p>4 Q Okay. And you current -- or, excuse me, strike 09:27AM</p> <p>5 that. 09:27AM</p> <p>6 You previously worked for Cisco; correct? 09:27AM</p> <p>7 A That's correct. 09:27AM</p> <p>8 Q Did you have an e-mail address when you were 09:27AM</p> <p>9 employed at Cisco? 09:27AM</p> <p>10 A Yes. 09:27AM</p> <p>11 Q And what was that e-mail address while you were 09:27AM</p> <p>12 employed at Cisco? 09:27AM</p> <p>13 A If I recall from five years ago, it's 09:27AM</p> <p>14 dpatil@cisco.com, I think. 09:27AM</p> <p>15 Q Okay. Mr. Patil, are you being represented by 09:28AM</p> <p>16 counsel at this deposition? 09:28AM</p> <p>17 A Yes. 09:28AM</p> <p>18 Q Okay. And who's representing you at this 09:28AM</p> <p>19 deposition? 09:28AM</p> <p>20 A Matt Cannon. 09:28AM</p> <p>21 Q Mr. Cannon -- 09:28AM</p> <p>22 A Mr. Cannon -- 09:28AM</p> <p>23 Q -- to your left? 09:28AM</p> <p>24 A Correct. 09:28AM</p> <p>25 Q Have you ever been deposed before, Mr. Patil? 09:28AM</p> <p style="text-align: right;">Page 9</p>

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1 MR. WONG: Right. 12:24PM	1 activity for LLDP was -- was happening, and it -- I 12:28PM
2 Q The Arista Networks's EOS was an example of 12:24PM	2 recall that it was -- it was slow for a period of time 12:28PM
3 innovation in this area; correct? 12:24PM	3 in between and then it took off again. 12:28PM
4 MR. CANNON: Objection; vague -- 12:24PM	4 BY MR. WONG: 12:28PM
5 THE WITNESS: Example, yes. 12:24PM	5 Q And you didn't participate in any of the efforts 12:28PM
6 MR. CANNON: -- mischaracterizes prior testimony, 12:24PM	6 to standardize LLDP from the '90s to 2004; is that 12:28PM
7 lacks foundation, calls for improper opinion testimony. 12:24PM	7 right? 12:28PM
8 BY MR. WONG: 12:24PM	8 A No. No. 12:28PM
9 Q And these are -- these are your words here on 12:24PM	9 Q And you played no role whatsoever in the creation 12:28PM
10 page 17 of Exhibit 314; correct, Mr. Patil? 12:24PM	10 of the LLDP standard; correct? 12:28PM
11 A These are my words, yes. 12:24PM	11 A No. 12:28PM
12 Q And you believed them to be true when you wrote 12:24PM	12 Q And how did you first learn about LLDP? 12:28PM
13 your thesis marked as Exhibit 314; correct? 12:24PM	13 A When I was tasked to lead that project at Cisco. 12:28PM
14 MR. CANNON: Objection; calls for improper 12:24PM	14 Q Who tasked you to lead that project at Cisco? 12:29PM
15 opinion testimony, lacks foundation. 12:24PM	15 A My director. 12:29PM
16 THE WITNESS: These are my words. These are my 12:24PM	16 Q Who was your director? 12:29PM
17 opinions. 12:25PM	17 A Purnam Sheth. 12:29PM
18 MR. WONG: Yeah. 12:25PM	18 Q Can you spell that, please. 12:29PM
19 Q Can you please provide me with a general 12:25PM	19 A S-h-e-t-h is the last name, and first name is 12:29PM
20 description of what "LLDP" is? 12:25PM	20 P-u-r-n-a-m. 12:29PM
21 A Yes. Yes, I can. 12:25PM	21 Q And how did you learn about the LLDP standard, 12:29PM
22 Q What -- what is "LLDP"? 12:25PM	22 the -- the way it worked? 12:29PM
23 A "LLDP" stands for Link Layer Discovery Protocol, 12:25PM	23 A I -- upon being tasked with this -- with this 12:29PM
24 and it is a -- at a high-level, it's a standardized way 12:25PM	24 project, to lead this project, I did some initial 12:29PM
25 for devices to discover each other and know of each 12:25PM	25 research and it was very aggressive project at that 12:29PM
Page 114	Page 116
1 other. 12:25PM	1 point, and so I -- yeah, I researched it actively and 12:29PM
2 Q When you say it's a "standardized way for devices 12:25PM	2 wanted to know as much of it as possible as early as 12:29PM
3 to discover each other and know of each other," what do 12:26PM	3 possible. 12:29PM
4 you mean by a "standardized way"? 12:26PM	4 Q When were you tasked with the LLDP project? 12:29PM
5 A "Standardized" in the sense that it's a industry 12:26PM	5 A Late 2005. 12:30PM
6 standardized agreement and -- and ratified agreement on 12:26PM	6 Q And what documents, if any, did you review to 12:30PM
7 how a discovery can happen in a standardized way, and 12:26PM	7 learn about the LLDP standard? 12:30PM
8 it's meant in contrast with how proprietary discovery 12:26PM	8 A I recall reviewing the very first version of the 12:30PM
9 mechanisms can happen. 12:26PM	9 RFC that they put out that was still not ratified, but 12:30PM
10 Q When you say it's a "ratified agreement," what do 12:26PM	10 there was an RFC and that -- that got me into it, yeah. 12:30PM
11 you mean by "ratified"? 12:26PM	11 Q Did you review the IEEE standard that related to 12:30PM
12 A "Ratified" means something that has been -- 12:26PM	12 LLDP? 12:30PM
13 something that has withstood the test of time and has 12:26PM	13 A Yes. 12:30PM
14 been reviewed by several experts in the industry who -- 12:27PM	14 MR. WONG: Let's mark this as 315, please. 12:30PM
15 who have the ability to see that -- not just from a 12:27PM	15 (Exhibit 315 was marked for 12:31PM
16 feature perspective but also from a holistic perspective 12:27PM	16 identification by the Court Reporter.) 12:31PM
17 to see if it was actually viable -- viable to do that, 12:27PM	17 MR. WONG: The Reporter has marked, as 12:31PM
18 and then they collectively meet and discuss their 12:27PM	18 Exhibit 315, document bearing control numbers 12:31PM
19 concerns and refine the standard appropriately and then 12:27PM	19 ARISTANDCA00017907 to 18078. 12:31PM
20 agree on a version that is -- that can be considered 12:27PM	20 Q Mr. Patil, do you recognize the document marked 12:31PM
21 standard. 12:27PM	21 as Exhibit 315? 12:31PM
22 Q Do you know when LLDP was standardized? 12:27PM	22 A I do. 12:31PM
23 MR. CANNON: Objection; vague. 12:27PM	23 Q And what is the document marked as Exhibit 315? 12:31PM
24 THE WITNESS: The initial attempt, I think, from 12:27PM	24 A This is the 802.1AB, which is the technical name 12:31PM
25 late '90s to early -- to 2004 is when the standards 12:28PM	25 for LLDP, and it's an IEEE standard that represents the 12:31PM
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1 A Okay. Yeah, I'm done. 01:04PM	1 mentioned, did the LLDP project involve implementing 01:07PM
2 Q Do you understand that Cisco has identified you 01:04PM	2 LLDP on those other operating systems? 01:07PM
3 as the author or originator of the commands lifted -- 01:04PM	3 A I was not aware of that. 01:07PM
4 listed on the left-side column of Exhibit 316? 01:05PM	4 Q Okay. So your personal involvement in Phase 1 of 01:07PM
5 A Yes. 01:05PM	5 the LLDP project focused only on implementing LLDP for 01:07PM
6 Q Okay. Now, are these commands listed in 01:05PM	6 Cisco IOS; correct? 01:08PM
7 Exhibit 316 associated with the LLDP project that we 01:05PM	7 A Mm-hmm. Yeah. 01:08PM
8 have been talking about this morning? 01:05PM	8 Q We mentioned -- strike that. 01:08PM
9 A Yes. 01:05PM	9 You mentioned the different stages that were part 01:08PM
10 Q Were these commands added to Cisco IOS as part of 01:05PM	10 of Phase 1 of the LLDP project. 01:08PM
11 Phase 1 of the LLDP project? 01:05PM	11 Do you remember that? 01:08PM
12 A Yes. That's correct, yes. 01:05PM	12 A Yes. 01:08PM
13 Q Okay. You can set that aside for now, Mr. Patil. 01:05PM	13 Q Can you let me know -- strike that. 01:08PM
14 We were talking before the break about how you 01:05PM	14 Can you list for me again the stages in the order 01:08PM
15 became involved in the LLDP project. 01:05PM	15 that they are handled? 01:08PM
16 Do you remember that? 01:05PM	16 MR. CANNON: Objection; asked and answered. 01:08PM
17 A Mm-hmm. 01:05PM	17 THE WITNESS: It's market analysis, slash, 01:08PM
18 Q Were there particular Cisco products that the 01:05PM	18 requirements as Stage 1. Architecture would be Stage 2. 01:08PM
19 LLDP implementation was going to apply to? 01:05PM	19 Design would be Stage 3, and implementation and testing 01:08PM
20 A Yes. 01:05PM	20 would be Stages 4 and 5. 01:08PM
21 Q Okay. And I'm asking at the time that you 01:05PM	21 BY MR. WONG: 01:08PM
22 started working on the LLDP project. 01:05PM	22 Q Testing is the fifth stage; correct? 01:08PM
23 Do you understand? 01:05PM	23 A Yes. 01:08PM
24 A Mm-hmm. 01:05PM	24 Q And it would go in that order, from Stage 1 to 01:08PM
25 Q What Cisco products were targeted for the LLDP 01:05PM	25 Stage 2 to Stage 3 to Stage 4 to Stage 5; correct? 01:09PM
Page 122	Page 124
1 implementation at the start of Phase 1 of the project? 01:06PM	1 A Technically, yes, but in the interest of time, 01:09PM
2 A The initial rollout was for the Catalyst family 01:06PM	2 some of these phases will -- stages will overlap. 01:09PM
3 of enterprise switches, the Catalyst 6500, the 01:06PM	3 Q How long did Phase 1 of the LLDP project take to 01:09PM
4 Catalyst 3000 series was soon to follow after that and, 01:06PM	4 go from Stage 1 to Stage 5? 01:09PM
5 later on, other platforms, including the SRIK, it opted 01:06PM	5 A I would say Stage 1 to Stage 5, roughly six 01:09PM
6 the standard. 01:06PM	6 months. 01:09PM
7 Q When you say "later on, other platforms," what do 01:06PM	7 Q So it took six months to go from the 01:09PM
8 you mean by "later on"? 01:06PM	8 marketing/requirements stage all the way through the 01:09PM
9 A "Later on" as in the 2010-'11 time frame, yeah. 01:06PM	9 fifth testing stage for -- for Phase 1; correct? 01:09PM
10 Q Okay. So initially in 2005, though, what were 01:06PM	10 A Yes. 01:09PM
11 the targeted Cisco products for the LLDP implementation? 01:06PM	11 Q Which of the five stages consumed the most time 01:09PM
12 A The Catalyst switches. 01:06PM	12 out of those six months? 01:09PM
13 Q And in terms of the operating system that the 01:06PM	13 A Architecture and design. 01:10PM
14 LLDP implementation would apply to, was it just Cisco 01:07PM	14 Q Oh, Stages 2 and 3? 01:10PM
15 IOS? 01:07PM	15 A Yes. 01:10PM
16 A Yes. 01:07PM	16 Q Did either architecture or design take more time 01:10PM
17 Q Okay. You are aware of other operating systems 01:07PM	17 than the other? 01:10PM
18 that are used by other Cisco products? 01:07PM	18 A I would say architecture took -- took more than a 01:10PM
19 A I am. 01:07PM	19 couple -- couple months to firm up. 01:10PM
20 Q What are the other operating systems that you are 01:07PM	20 Q So how many months or weeks -- strike that. 01:10PM
21 aware of that are used by other Cisco products? 01:07PM	21 How long, approximately, did it take for the 01:10PM
22 A The Cisco XR, Cisco ENA. I think it's been 01:07PM	22 design stage of Phase 1 of the LLDP project to be 01:10PM
23 renamed the NX-OS. There's also -- what do they call -- 01:07PM	23 completed? 01:10PM
24 the software router, but those are the main ones. 01:07PM	24 A About three and a half to four weeks. 01:10PM
25 Q And those other operating systems that you just 01:07PM	25 Q And what is part of the design stage for Phase 1 01:10PM
Page 123	Page 125

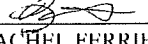
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1 A Compliant with, yes. 01:37PM	1 that with one -- with just one vendor's equipment just 01:40PM
2 Q In the third paragraph on page 3 of Exhibit 317, 01:37PM	2 to make SNMP work, and that level of interoperability at 01:40PM
3 first sentence says, "LLDP facilitates the use of 01:37PM	3 the SNMP level can be very handy in -- in -- in larger 01:40PM
4 standard management tools such as SNMP in a multi-vendor 01:37PM	4 networks. 01:40PM
5 network..." 01:37PM	5 BY MR. WONG: 01:40PM
6 Do you see that? 01:37PM	6 Q If there wasn't the standardization for SNMP 01:40PM
7 A Yes. 01:37PM	7 inquiries and you had a multivendor network, would you 01:40PM
8 Q What do you mean by that statement? 01:37PM	8 have to write different SNMP inquiries for each network? 01:40PM
9 A So the answer to that might get a little 01:37PM	9 MR. CANNON: Objection; vague, incomplete 01:41PM
10 technical, but I'll say that anyway. 01:37PM	10 hypothetical, lacks foundation, calls for improper 01:41PM
11 Part of the IEEE standard is also a specification 01:37PM	11 opinion testimony. 01:41PM
12 of topology Management Information Base, which can be 01:37PM	12 THE WITNESS: If that were the case, then -- then 01:41PM
13 developed to make SNMP queries, so if the Management 01:37PM	13 we are -- we are essentially talking of vendor-specific 01:41PM
14 Information Base can be standard across all vendors, 01:37PM	14 Management Information Bases, and that would, at the 01:41PM
15 that means that the SNMP queries will apply universally 01:38PM	15 very least, at least require some level of nonstandard 01:41PM
16 across all vendors, and that's the -- the added 01:38PM	16 or tailored queries for each vendor. 01:41PM
17 advantage of standardizing this. 01:38PM	17 BY MR. WONG: 01:41PM
18 Q And what is "SNMP"? 01:38PM	18 Q If you turn back to Exhibit 315, it's the IEEE 01:42PM
19 A It -- it stands for Simple Network Management 01:38PM	19 standard for LLDP. 01:42PM
20 Protocol. 01:38PM	20 A Yes. 01:42PM
21 Q And how was -- what's the function or purpose of 01:38PM	21 Q Now, LLDP is a defined term in the IEEE standard; 01:42PM
22 SNMP? 01:38PM	22 correct? 01:42PM
23 MR. CANNON: Objection; vague. 01:38PM	23 A Yes. 01:42PM
24 THE WITNESS: The purpose of SNMP is to, 01:38PM	24 Q In fact, if you look to page 5 of -- and I'm 01:42PM
25 essentially, allow network administrators and engineers 01:38PM	25 looking -- pointing to page 5 at the bottom of the page 01:42PM
Page 146	Page 148
1 and developers to be able to create network information 01:38PM	1 of Exhibit 315, there is a section on the top that it 01:42PM
2 and send -- send trap -- what are called -- technically 01:38PM	2 says "Definitions and numerical representation." 01:42PM
3 called "traps," SNMP traps, to signal significant events 01:39PM	3 Do you see that? 01:42PM
4 in a network. And it's a protocol that persists network 01:39PM	4 A Yes. 01:42PM
5 information in a -- in a place called MIB, Management 01:39PM	5 Q And entry 3.1.6 -- 01:42PM
6 Information Base, and then provides a user interface 01:39PM	6 A Yes. 01:42PM
7 to -- to query that data. 01:39PM	7 Q -- defines Link Layer Discovery Protocol and, in 01:42PM
8 BY MR. WONG: 01:39PM	8 parentheses, LLDP. 01:42PM
9 Q And I think you said that if the Management 01:39PM	9 Do you see that? 01:42PM
10 Information Base, or MIB, can be standard across all 01:39PM	10 A Mm-hmm. 01:42PM
11 vendors, that means that the SNMP inquiries [sic] will 01:39PM	11 Q So you were aware that LLDP was a defined acronym 01:42PM
12 apply universally across all vendors; right? 01:39PM	12 in the actual IEEE standard while you were working on 01:43PM
13 A Yes. 01:39PM	13 Phase 1 of the LLDP project; correct? 01:43PM
14 Q So that means that a network administrator and 01:39PM	14 MR. CANNON: Objection; vague. 01:43PM
15 engineers can use the same SNMP inquiries for different 01:39PM	15 THE WITNESS: Yes. 01:43PM
16 vendor products; correct? 01:39PM	16 BY MR. WONG: 01:43PM
17 A Correct, if they are connect -- interconnected. 01:39PM	17 Q If you turn the page to page 6 -- 01:43PM
18 Q And what's the advantage of -- what's the 01:39PM	18 A Mm-hmm. 01:43PM
19 advantage to a network administrator to be able to use 01:40PM	19 Q -- entry 3.1.21. 01:43PM
20 the same SNMP inquiries for different vendor products? 01:40PM	20 Do you see that? 01:43PM
21 MR. CANNON: Objection; vague, lacks foundation, 01:40PM	21 A Yes. 01:43PM
22 calls for improper opinion testimony. 01:40PM	22 Q It says, "type, length, value (TLV)." 01:43PM
23 THE WITNESS: If a certain topology or deployment 01:40PM	23 Do you see that? 01:43PM
24 includes multiple -- inputs equipment from multiple 01:40PM	24 A Yes. 01:43PM
25 vendors, they don't have to tear that apart and replace 01:40PM	25 Q You were aware, by Stage 1 or at least Stage 2 of 01:43PM
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1 Phase 1 of the LLDP project, that the IEEE standard for	01:43PM	1 that?	01:45PM
2 LLDP defined the acronym TLV; correct?	01:43PM	2 MR. WONG: I'll tell you once I see it. Yes,	01:45PM
3 MR. CANNON: Objection; vague, mischaracterizes	01:43PM	3 page 39. Control number is -- ends in 17959.	01:46PM
4 the document,	01:43PM	4 Q Are you there?	01:46PM
5 THE WITNESS: Yes.	01:43PM	5 A Yeah, I am.	01:46PM
6 BY MR. WONG:	01:43PM	6 Q So Section 10.3.4 is called "Too many neighbors."	01:46PM
7 Q In fact, on page 7 of Exhibit 315, at the very	01:43PM	7 Do you see that?	01:46PM
8 top, it's a section called "Acronyms and abbreviations";	01:43PM	8 A Mm-hmm.	01:46PM
9 correct?	01:43PM	9 Q Now, we were talking earlier about the use of the	01:46PM
10 A Yes.	01:43PM	10 word "neighbors" in the functional specification that	01:46PM
11 Q And both LLDP and TLV are listed as defined	01:43PM	11 you wrote --	01:46PM
12 acronyms within the IEEE LLDP standard; right?	01:43PM	12 A Yes.	01:46PM
13 A Yes.	01:44PM	13 Q -- right?	01:46PM
14 Q And you were aware of that before you began the	01:44PM	14 A Yes.	01:46PM
15 design stage for Phase 1 of the LLDP project; right?	01:44PM	15 Q Is this use of the word "neighbors" here in the	01:46PM
16 A Yes.	01:44PM	16 IEEE specification the -- the same use of the word	01:46PM
17 Q And you were aware of that during the design	01:44PM	17 "neighbors" that you were using in the functional	01:46PM
18 period for the LLDP project; correct?	01:44PM	18 specification?	01:46PM
19 A Yes.	01:44PM	19 MR. CANNON: Objection; vague.	01:46PM
20 Q And if you look at Exhibit 316, which is this	01:44PM	20 THE WITNESS: I was -- I read this specification	01:46PM
21 list of commands?	01:44PM	21 thoroughly, so I -- yeah, I was influenced by some of	01:46PM
22 A Okay.	01:44PM	22 the language in here.	01:47PM
23 Q Are you there?	01:44PM	23 BY MR. WONG:	01:47PM
24 Each of the commands associated with you include	01:44PM	24 Q But you -- you became familiar with the	01:47PM
25 the acronym LLDP.	01:44PM	25 terminology relevant to LLDP by reading the IEEE	01:47PM
Page 150		Page 152	
1 Do you see that?	01:44PM	1 standard on LLDP; right?	01:47PM
2 A Yes.	01:44PM	2 MR. CANNON: Objection; vague.	01:47PM
3 Q That LLDP is the same LLDP that is defined within	01:44PM	3 THE WITNESS: Yes.	01:47PM
4 the IEEE LLDP standard; right?	01:44PM	4 BY MR. WONG:	01:47PM
5 MR. CANNON: Objection; vague.	01:44PM	5 Q And in particular here, you were aware that the	01:47PM
6 THE WITNESS: It's -- yeah, it -- it refers to	01:44PM	6 term "neighbors" was used in the IEEE LLDP standard;	01:47PM
7 the Link Layer Discovery Protocol.	01:44PM	7 right?	01:47PM
8 BY MR. WONG:	01:45PM	8 A Mm-hmm.	01:47PM
9 Q I mean, that's the same acronym that appears here	01:45PM	9 MR. CANNON: Objection; vague.	01:47PM
10 on page 7 of Exhibit 315; right? Under "Acronyms and	01:45PM	10 BY MR. WONG:	01:47PM
11 abbreviations" within the IEEE standard; correct?	01:45PM	11 Q Oh, I'm sorry, can you -- let me -- let me ask	01:47PM
12 MR. CANNON: Objection; documents speak for	01:45PM	12 the question one more time.	01:47PM
13 themselves.	01:45PM	13 And in particular here, Section 10.3.4 of	01:47PM
14 THE WITNESS: Yes.	01:45PM	14 Exhibit 315, you were aware that the term "neighbors"	01:47PM
15 BY MR. WONG:	01:45PM	15 was used in the IEEE LLDP standard, yes?	01:47PM
16 Q And your choice of LLDP in each of the commands	01:45PM	16 MR. CANNON: Objection; vague.	01:47PM
17 listed on Exhibit 316, that was intentionally meant to	01:45PM	17 THE WITNESS: Yes.	01:47PM
18 refer to the LLDP acronym within the IEEE standard;	01:45PM	18 BY MR. WONG:	01:47PM
19 right?	01:45PM	19 Q Can you turn to page -- or Section 5.2, please,	01:48PM
20 MR. CANNON: Objection; vague.	01:45PM	20 of Exhibit 315, and that is page 8.	01:48PM
21 THE WITNESS: Yes.	01:45PM	21 Are you there?	01:48PM
22 BY MR. WONG:	01:45PM	22 A Yes.	01:48PM
23 Q If you look at Section 10.3.4 of Exhibit 315 --	01:45PM	23 Q Section 5.2 on page 8 of Exhibit 315 says	01:48PM
24 let me know when you are there.	01:45PM	24 "Required capabilities."	01:48PM
25 MR. CANNON: Do you have the page number for	01:45PM	25 Do you see that?	01:48PM
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1 I, the undersigned, a Certified Shorthand
2 Reporter of the State of California, do hereby certify:
3 That the foregoing proceedings were taken before
4 me at the time and place herein set forth; that any
5 witnesses in the foregoing proceedings, prior to
6 testifying, were placed under oath; that a verbatim
7 record of the proceedings was made by me using machine
8 shorthand which was thereafter transcribed under my
9 direction; further, that the foregoing is an accurate
10 transcription thereof.
11 I further certify that I am neither financially
12 interested in the action nor a relative or employee of
13 any attorney or any of the parties.
14 IN WITNESS WHEREOF, I have this date subscribed
15 my name.
16 Dated: March 2, 2016
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21 RACHEL FERRIER
22 CSR No. 6948
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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

CISCO SYSTEMS, INC.,)
Plaintiff,)
vs.) Case No.:
5:14-cv-05344-BLF (PSG)
ARISTA NETWORKS, INC.,)
Defendant.)

ATTORNEYS' EYES ONLY - HIGHLY CONFIDENTIAL
VIDEOTAPED DEPOSITION OF ABHAY ROY
Palo Alto, California
Friday, December 18, 2015
Volume 1

Reported by:
RACHEL FERRIER
CSR No. 6948
Job No. 2200521
PAGES 1 - 232

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<p>1 UNITED STATES DISTRICT COURT 2 NORTHERN DISTRICT OF CALIFORNIA 3 SAN JOSE DIVISION 4 5 _____ 6 CISCO SYSTEMS, INC.,) 7 Plaintiff,) 8 vs.)Case No.: 9 ARISTA NETWORKS, INC.,)5:14-cv-05344-BLF(PSG) 10 Defendant.) 11 _____ 12 13 VIDEOTAPED DEPOSITION OF ABHAY ROY, VOLUME 1 14 taken on behalf of the Defendant, at Wilson Sonsini 15 Goodrich & Rosati, 601 California Avenue, Palo Alto, 16 California, beginning at 9:30 a.m. and ending at 17 4:47 p.m. on Friday, December 18, 2015, before 18 RACHEL FERRIER, Certified Shorthand Reporter No. 6948. 19 20 21 22 23 24 25</p>	<p>1 APPEARANCES (continued): 2 3 For Defendant ARISTA NETWORKS, INC.: 4 KEKER & VAN NEST, LLP 5 BY: DAVID J. SILBERT 6 ELIZABETH K. McCLOSKEY 7 Attorneys at Law 8 633 Battery Street 9 San Francisco, CA 94111 10 415.676.2269 11 dsilbert@kvn.com 12 emccloskey@kvn.com 13 14 Videographer: 15 CASSIA LEET 16 17 18 19 20 21 22 23 24 25</p>
Page 2	Page 4
<p>1 APPEARANCES: 2 3 For Plaintiff CISCO SYSTEMS, INC., and the Witness: 4 QUINN EMANUEL URQUHART & SULLIVAN LLP 5 BY: JOHN M. NEUKOM 6 Attorney at Law 7 50 California Street, 22nd Floor 8 San Francisco, CA 94111 9 415.875.6320 10 johnneukom@quinnemanuel.com 11 and 12 QUINN EMANUEL URQUHART & SULLIVAN LLP 13 BY: SIDNEY ARCHIBALD 14 Attorney at Law 15 555 Twin Dolphin Drive, 5th Floor 16 Redwood Shores, CA 94065 17 650.801.5000 18 sydneyarchibald@quinnemanuel.com 19 20 21 22 23 24 25</p>	<p>1 INDEX 2 WITNESS EXAMINATION 3 ABHAY ROY 4 VOLUME 1 5 6 BY MR. SILBERT 10, 87, 219 7 8 9 EXHIBITS 10 NUMBER DESCRIPTION PAGE 11 Exhibit 51 LinkedIn Profile for Abhay Roy 11 12 13 Exhibit 52 Cisco IOS Master Command List, All Releases 18 14 Exhibit 53 CLI Design and Review Guide 15 (Bates CSI-ANI-00073381 - 00073381.000014) 40 16 17 Exhibit 54 Cisco's Third Supplemental Response to Interrogatory No. 16 and Response to 18 Interrogatory No. 19 Amended Exhibit F 57 19 20 Exhibit 55 Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop) 21 (Bates ARISTANDCA00030805 - 00030811) 61 22 23 Exhibit 56 The OSPF Specification (Bates ARISTANDCA00022597 - 00022703) 80 24 25</p>
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<p>1 EXHIBITS</p> <p>2 NUMBER DESCRIPTION PAGE</p> <p>3 Exhibit 57 Bidirectional Forwarding Detection (BFD)</p> <p>4 (Bates ARISTANDCA00030756 - 00030804) 99</p> <p>5</p> <p>6 Exhibit 58 Internet Protocol, Version 6 (IPv6) Specification</p> <p>7 (Bates ARISTANDCA00025710 - 00025746) 105</p> <p>8</p> <p>9 Exhibit 59 OSPF Commands: ip ospf fast-reroute per-prefix through R 130</p> <p>10</p> <p>11 Exhibit 60 CSCdi42640 (Bates CSI-CLI-01542004) 137</p> <p>12 Exhibit 61 CSCdj76740 140</p> <p>13 Exhibit 62 CSCdj76740 140</p> <p>14 Exhibit 63 Screen shot of a webpage titled "Do you have knowledge of IPR in draft-ietf-isis-mi" 169</p> <p>15</p> <p>16 Exhibit 64 Screen shot of a webpage titled "Re:[68ATTENDEES] RFC Author License Execution Opportunity" 171</p> <p>17</p> <p>18 Exhibit 65 E-mail chain dated 11/23/15 to Leo Boulton, et al., from Brian Jackson</p> <p>19 (Bates CSI-CLI-01477442 - 01477448) 179</p> <p>20</p> <p>21 Exhibit 66 E-mail chain dated 9/8/15 from Umesh Dudani to Abhay Roy</p> <p>22 (Bates CSI-CLI-01438733 - 01438743) 193</p> <p>23</p> <p>24</p> <p>25</p> <p>Page 6</p>	<p>1 INDEX (Continued):</p> <p>2 PREVIOUSLY MARKED EXHIBITS</p> <p>3 EXHIBIT PAGE</p> <p>4 29 75</p> <p>5 (Retained by Counsel)</p> <p>6</p> <p>7 INSTRUCTION NOT TO ANSWER</p> <p>8 Page Line</p> <p>9 57 23</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p>Page 8</p>
<p>1 EXHIBITS</p> <p>2 NUMBER DESCRIPTION PAGE</p> <p>3 Exhibit 67 E-mail chain dated 7/3/13 from Vittal Krishnamurthy to Pranav Mehta, et al. (Bates CSI-CLI-01483915 - 01483921) 201</p> <p>4</p> <p>5 Exhibit 68 E-mail chain dated 9/16/15 from Shane Corban to Yong Hu, et al. (Bates CSI-CLI-01440122 - 01440128) 204</p> <p>6</p> <p>7 Exhibit 69 OSPFv3 support in IOS Software Unit Functional Specification (Bates CSI-CLI-00609752 - 00609769) 219</p> <p>8</p> <p>9 Exhibit 70 Support of BFD in OSPFv2 Functional Specification (Bates CSI-CLI-00610401 - 00610409) 219</p> <p>10</p> <p>11 Exhibit 71 CSCdk33792 219</p> <p>12</p> <p>13 Exhibit 72 CSCdk33792 219</p> <p>14</p> <p>15 Exhibit 73 Support of BFD in OSPFv2 Functional Specification (Bates CSI-CLI-00610410 - 00610420) 219</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p>Page 7</p>	<p>1 Palo Alto, California; Friday, December 18, 2015</p> <p>2 9:30 a.m.</p> <p>3 09:30AM</p> <p>4 THE VIDEOGRAPHER: Good morning. We are on the 09:30AM</p> <p>5 record at 9:30 a.m. on December 18th, 2015. 09:30AM</p> <p>6 This is the video-recorded deposition of 09:30AM</p> <p>7 Abhay Roy. 09:30AM</p> <p>8 My name is Cassia Leet, here with our Court 09:30AM</p> <p>9 Reporter, Rachel Ferrier. We are here from Veritext 09:30AM</p> <p>10 Legal Solutions at the request of counsel for the 09:30AM</p> <p>11 defendant. 09:30AM</p> <p>12 This deposition is being held at 601 California 09:30AM</p> <p>13 Avenue, Palo Alto, California 94304. 09:30AM</p> <p>14 The caption of this case is Cisco Systems, Inc., 09:31AM</p> <p>15 versus Arista Networks, Inc., in the United States 09:31AM</p> <p>16 District Court, Northern District of California, 09:31AM</p> <p>17 San Jose Division, Case No. 5:14-cv-05344-BLF (PSG). 09:31AM</p> <p>18 Please note that the audio and video recording 09:31AM</p> <p>19 will take place unless all parties agree to go off the 09:31AM</p> <p>20 record. Microphones are sensitive and may pick up 09:31AM</p> <p>21 whispers and private conversations. 09:31AM</p> <p>22 I am not related to any party in this action, nor 09:31AM</p> <p>23 am I financially interested in the outcome in any way. 09:31AM</p> <p>24 If there are any objections to the proceeding, 09:31AM</p> <p>25 please state them at the time of your appearance, 09:31AM</p> <p>Page 9</p>

3 (Pages 6 - 9)

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<p>1 Q Okay. What's the significance of the term "ip" 11:24AM</p> <p>2 at the start of this command? 11:24AM</p> <p>3 A IP -- I think we -- we kept "ip" as the top-level 11:24AM</p> <p>4 keyword for things which were related to IP before, so 11:24AM</p> <p>5 "ip" really implies IP Version 4. 11:24AM</p> <p>6 Q Okay. And just to back up for a second, IP 11:24AM</p> <p>7 stands for Internet protocol; correct? 11:24AM</p> <p>8 A That is correct. 11:24AM</p> <p>9 Q And IPv4 stands for -- or refers to Version 4 of 11:24AM</p> <p>10 the Internet protocol; is that correct? 11:24AM</p> <p>11 A That is correct. That is correct. 11:24AM</p> <p>12 Q And the Internet protocol is specified in a 11:24AM</p> <p>13 standard published by the IETF; correct? 11:24AM</p> <p>14 A That it's correct. 11:24AM</p> <p>15 Q And IPv4 is specified in a standard published by 11:24AM</p> <p>16 the IP -- IETF; correct? 11:25AM</p> <p>17 A Yes, that's correct. 11:25AM</p> <p>18 Q Okay. The acronym IP was used by the industry to 11:25AM</p> <p>19 refer to Internet protocol before Cisco used it in CLI 11:25AM</p> <p>20 commands; correct? 11:25AM</p> <p>21 MR. NEUKOM: Objection; foundation. 11:25AM</p> <p>22 THE WITNESS: So the term "IP," just like we 11:25AM</p> <p>23 discussed for BFD -- right? -- when you write Internet 11:25AM</p> <p>24 standard, you try to abbreviate technologies, and, 11:25AM</p> <p>25 again, we can look at that document and confirm that's 11:25AM</p> <p style="text-align: right;">Page 74</p>	<p>1 this document, Exhibit 29? 11:27AM</p> <p>2 MR. NEUKOM: Objection; foundation. 11:27AM</p> <p>3 THE WITNESS: So I'm just reading page 1 -- or 11:27AM</p> <p>4 what you have in your bottom as 1557. Just below the 11:27AM</p> <p>5 RFC 791, it says, Replaces RFC 760, which generally 11:27AM</p> <p>6 implies there was prior work, which -- which his 11:27AM</p> <p>7 supersedes. 11:27AM</p> <p>8 BY MR. SILBERT: 11:28AM</p> <p>9 Q Okay. And forgive me if I've asked you this -- 11:28AM</p> <p>10 (Discussion off the stenographic record.) 11:28AM</p> <p>11 BY MR. SILBERT: 11:28AM</p> <p>12 Q I apologize if I've asked you this already, but 11:28AM</p> <p>13 have -- have you heard the Internet protocol abbreviated 11:28AM</p> <p>14 IP outside the context of Cisco? 11:29AM</p> <p>15 A As in what are the other possible abbreviations? 11:29AM</p> <p>16 For example, intellectual property we use "IP" term all 11:29AM</p> <p>17 the time. 11:29AM</p> <p>18 Q We do that too. No. 11:29AM</p> <p>19 My question is: Have you heard the abbreviation 11:29AM</p> <p>20 IP used to refer to the Internet protocol outside the 11:29AM</p> <p>21 context of Cisco? 11:29AM</p> <p>22 MR. NEUKOM: Objection; vague. 11:29AM</p> <p>23 THE WITNESS: So in -- in IETF -- as part of my 11:29AM</p> <p>24 role in IETF, people do loosely refer Internet Protocol 11:29AM</p> <p>25 Version 6 as "IP," as -- as one -- one of the variants. 11:29AM</p> <p style="text-align: right;">Page 76</p>
<p>1 true or not. I'm guessing it says Internet protocol and 11:25AM</p> <p>2 that abbreviates it as "IP," and the document refers to 11:25AM</p> <p>3 that so that you don't have to keep saying "Internet 11:25AM</p> <p>4 protocol" or "Internet Protocol Version 4." 11:25AM</p> <p>5 MR. NEUKOM: By the way, David, while you are 11:26AM</p> <p>6 getting a new document, just as a housekeeping matter, 11:26AM</p> <p>7 30 minutes or so ago I objected to a question you asked 11:26AM</p> <p>8 the witness on the basis of attorney-client privilege, 11:26AM</p> <p>9 and I meant to have objected on the basis of attorney 11:26AM</p> <p>10 work product. 11:26AM</p> <p>11 MR. SILBERT: Okay. 11:26AM</p> <p>12 MR. NEUKOM: So. 11:26AM</p> <p>13 BY MR. SILBERT: 11:26AM</p> <p>14 Q This is -- let me show you a document that's 11:26AM</p> <p>15 already been marked as Exhibit 29 in this case. 11:26AM</p> <p>16 Do you recognize this document? 11:26AM</p> <p>17 A Yes, I do. 11:27AM</p> <p>18 Q What is it? 11:27AM</p> <p>19 A This is an RFC which details the Internet 11:27AM</p> <p>20 protocol. 11:27AM</p> <p>21 Q And the publication date shown here is 11:27AM</p> <p>22 September 1981; correct? 11:27AM</p> <p>23 A Yes, that is correct. 11:27AM</p> <p>24 Q And was this, to your knowledge, the first 11:27AM</p> <p>25 version of the Internet protocol that's described in 11:27AM</p> <p style="text-align: right;">Page 75</p>	<p>1 There are, again, multiple ways to say that. 11:29AM</p> <p>2 BY MR. SILBERT: 11:29AM</p> <p>3 Q Have you heard the expression "TCP/IP"? 11:29AM</p> <p>4 A Yes, I have. 11:29AM</p> <p>5 Q Do you know what the IP stands for in that 11:29AM</p> <p>6 expression? 11:29AM</p> <p>7 A That is the Internet protocol. 11:30AM</p> <p>8 Q Okay. And that's the same Internet protocol that 11:30AM</p> <p>9 we have been discussing here this morning; correct? 11:30AM</p> <p>10 A Correct. 11:30AM</p> <p>11 Except in -- when you say "TCP/IP," it's probably 11:30AM</p> <p>12 a little broader because it does not imply which IP 11:30AM</p> <p>13 version you might be using. For example, you may be 11:30AM</p> <p>14 using IP with IP Version 6, or you may be using 11:30AM</p> <p>15 IP Version 4. It's a slightly broader term. 11:30AM</p> <p>16 Q Okay. I think you mentioned this previously, but 11:30AM</p> <p>17 before somebody came up with the expression "ip ospf 11:30AM</p> <p>18 authentication," Cisco used "IP" as a top-level keyword 11:30AM</p> <p>19 in other commands; correct? 11:30AM</p> <p>20 A That is correct. 11:30AM</p> <p>21 Q And so when someone came up with the expression 11:31AM</p> <p>22 "ip ospf authentication," they followed that same 11:31AM</p> <p>23 syntax; correct? 11:31AM</p> <p>24 MR. NEUKOM: Objection; vague. 11:31AM</p> <p>25 THE WITNESS: Authentication keyword, when it was 11:31AM</p> <p style="text-align: right;">Page 77</p>

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<p>1 introduced -- again, I'm trying to recollect from my 11:31AM</p> <p>2 20-year-old memory. IP OSPF existed in the sense that 11:31AM</p> <p>3 there were commands with IP OSPF some other options. It 11:31AM</p> <p>4 made sense to attach authentication to that chain 11:31AM</p> <p>5 already rather than sort of create something brand new. 11:31AM</p> <p>6 BY MR. SILBERT: 11:31AM</p> <p>7 Q Okay. And, in fact, if you look below -- looking 11:31AM</p> <p>8 still at Exhibit 54, if you look immediately below "ip 11:31AM</p> <p>9 ospf authentication," do you see the entry for "ip ospf 11:31AM</p> <p>10 authentication-key"? 11:32AM</p> <p>11 A Yes, I see that. 11:32AM</p> <p>12 Q And the -- if you look there, the date of the 11:32AM</p> <p>13 earliest-known document that's listed for that 11:32AM</p> <p>14 expression is 1993, which is five years or so earlier 11:32AM</p> <p>15 than the date listed for "ip ospf authentication"; is 11:32AM</p> <p>16 that correct? 11:32AM</p> <p>17 A That's what this document says, yes. 11:32AM</p> <p>18 Q Do you know what the person or persons who came 11:32AM</p> <p>19 up with the expression "ip ospf authentication" referred 11:32AM</p> <p>20 to when coming up with that expression? 11:32AM</p> <p>21 A Are you asking for the previous command, which is 11:32AM</p> <p>22 the "ip ospf authentication" -- 11:32AM</p> <p>23 Q Yes. 11:32AM</p> <p>24 A -- or the "key" command -- 11:32AM</p> <p>25 Q No. 11:32AM</p> <p style="text-align: right;">Page 78</p>	<p>1 A Yes. 11:34AM</p> <p>2 MR. NEUKOM: Objection; misstates prior 11:34AM</p> <p>3 testimony. 11:34AM</p> <p>4 THE WITNESS: Yes. I don't have, again, specific 11:34AM</p> <p>5 recollection of what sort of documentation or documents 11:34AM</p> <p>6 we wrote at that time. 11:34AM</p> <p>7 BY MR. SILBERT: 11:34AM</p> <p>8 Q Okay. We have talked a little bit about OSPF. 11:34AM</p> <p>9 There's an OSPF standard that's published by 11:34AM</p> <p>10 IETF; correct? 11:34AM</p> <p>11 MR. NEUKOM: Objection; vague. 11:34AM</p> <p>12 THE WITNESS: So OSPF is basically Open Shortest 11:34AM</p> <p>13 Path First. It's one of the routing protocols. OSPF 11:34AM</p> <p>14 has had multiple IETF standards published over time, and 11:34AM</p> <p>15 as we just saw, in the case of IP, sometimes the newer 11:35AM</p> <p>16 one deprecate the older one and so on, so there are 11:35AM</p> <p>17 multiple standards out there related to OSPF. 11:35AM</p> <p>18 MR. SILBERT: Okay. 11:35AM</p> <p>19 (Exhibit 56 was marked for 11:35AM</p> <p>20 identification by the Court Reporter.) 11:35AM</p> <p>21 BY MR. SILBERT: 11:35AM</p> <p>22 Q Mr. Roy, would you please look at Exhibit 56 and 11:36AM</p> <p>23 tell me if you recognize it. 11:36AM</p> <p>24 A Yes, I do. 11:36AM</p> <p>25 Q What is it? 11:36AM</p> <p style="text-align: right;">Page 80</p>
<p>1 A -- the previous -- okay. 11:32AM</p> <p>2 Q Yeah. 11:32AM</p> <p>3 A "Ip ospf authentication" referred to enabling the 11:32AM</p> <p>4 authentication features -- as we said, it could be 11:33AM</p> <p>5 clear text or it could be message digest -- on that 11:33AM</p> <p>6 interface. 11:33AM</p> <p>7 Q Yeah, I apologize because my question -- 11:33AM</p> <p>8 A Okay. 11:33AM</p> <p>9 Q -- wasn't clear. 11:33AM</p> <p>10 What I actually was trying to ask you was: Do 11:33AM</p> <p>11 you know what documents or source materials the people 11:33AM</p> <p>12 who came up with the expression "ip ospf authentication" 11:33AM</p> <p>13 referred to when naming that command? 11:33AM</p> <p>14 A So I can't tell you anything very specific, but 11:33AM</p> <p>15 what typically happens, I can say, is when you write a 11:33AM</p> <p>16 new command, of course, you will see source code 11:33AM</p> <p>17 changes, which looks like it refers to. You may also 11:33AM</p> <p>18 produce customer-facing documents. For example, we saw 11:33AM</p> <p>19 command reference where also this will get documented as 11:33AM</p> <p>20 what it does and what the syntax is and so on. 11:33AM</p> <p>21 Q Okay. And just to be clear, you are saying 11:33AM</p> <p>22 that's what typically happens because you don't know 11:34AM</p> <p>23 what the person or persons who named the command 11:34AM</p> <p>24 "ip ospf authentication" actually referred to when they 11:34AM</p> <p>25 named that command; is that correct? 11:34AM</p> <p style="text-align: right;">Page 79</p>	<p>1 A This is another of OSPF standards RFC, which 11:36AM</p> <p>2 specifies OSPF protocol, protocol specification. 11:36AM</p> <p>3 Q And this document states that it was published in 11:36AM</p> <p>4 October 1989; correct? 11:36AM</p> <p>5 A That is correct. 11:36AM</p> <p>6 Q And the author listed here is someone named 11:36AM</p> <p>7 J. Moy, M-o-y; is that correct? 11:36AM</p> <p>8 A Yes. John Moy was the author. 11:36AM</p> <p>9 Q And the company where he's listed as working is 11:36AM</p> <p>10 Proteon, Inc.; is that correct? 11:37AM</p> <p>11 A Correct, so at the time of publication of this 11:37AM</p> <p>12 document, he was employed by Proteon, Inc. 11:37AM</p> <p>13 Q Do you know Mr. Moy? 11:37AM</p> <p>14 A Yes, I do. 11:37AM</p> <p>15 Q Did he ever work for Cisco? 11:37AM</p> <p>16 A Not that I know of. 11:37AM</p> <p>17 Q This document, in its title, uses the acronym 11:37AM</p> <p>18 OSPF; correct? 11:37AM</p> <p>19 A Yes, it does. 11:37AM</p> <p>20 Q Who -- who came up with that acronym, to your 11:37AM</p> <p>21 knowledge? 11:37AM</p> <p>22 A So I think I'll give you the same answer I gave 11:37AM</p> <p>23 for BFD. If you move to the page 1, which is 2601 in 11:37AM</p> <p>24 the bottom-right label, and if you see Section 1, talks 11:37AM</p> <p>25 about the first time that abbreviation was introduced, 11:37AM</p> <p style="text-align: right;">Page 81</p>

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<p>1 and that's very typical in IETF standards, that the long 11:38AM</p> <p>2 things we create acronym at the first reference and 11:38AM</p> <p>3 continue to use it in this document. 11:38AM</p> <p>4 Q So my question is just this: So far as you know, 11:38AM</p> <p>5 someone outside of Cisco came up with the acronym OSPF; 11:38AM</p> <p>6 correct? 11:38AM</p> <p>7 A So IETF -- IETF products is a complicated 11:38AM</p> <p>8 process, and let me just give you a quick glimpse of it. 11:38AM</p> <p>9 What you are seeing is the finished product. 11:38AM</p> <p>10 which John Moy was the lead author and he took it to the 11:38AM</p> <p>11 RFC. 11:38AM</p> <p>12 What happened before that and how many versions 11:38AM</p> <p>13 were there and who are the people who sort of worked and 11:38AM</p> <p>14 collaborated to get to this stage, you can find that 11:38AM</p> <p>15 information, that -- how many earlier revisions of the 11:38AM</p> <p>16 drafts are there, who are the collaborator, where they 11:38AM</p> <p>17 worked for -- whichever companies they worked for, 11:39AM</p> <p>18 right? -- and how did they come to this. 11:39AM</p> <p>19 So it's hard to say, just looking at this, who 11:39AM</p> <p>20 came with this and who coined the term or who coined the 11:39AM</p> <p>21 acronym OSPF. 11:39AM</p> <p>22 Q Okay. But nevertheless, that acronym was in 11:39AM</p> <p>23 common usage before it was used by Cisco in a CLI 11:39AM</p> <p>24 command; correct? 11:39AM</p> <p>25 MR. NEUKOM: Objection; calls for opinion 11:39AM</p> <p style="text-align: right;">Page 82</p>	<p>1 A Yeah, I see that. 11:41AM</p> <p>2 Q What is an area data structure in OSPF? 11:41AM</p> <p>3 MR. NEUKOM: Objection; calls for opinion 11:41AM</p> <p>4 testimony. 11:41AM</p> <p>5 THE WITNESS: So "data structure" is -- is a 11:41AM</p> <p>6 computer science terminology which is how you store 11:41AM</p> <p>7 data, potentially, in a software implementation. 11:41AM</p> <p>8 "Area" is a concept introduced in this RFC 11:41AM</p> <p>9 which -- which refers to a collection of devices which 11:42AM</p> <p>10 have -- which are in the same area -- or who make a 11:42AM</p> <p>11 collective decision together by -- by knowing each 11:42AM</p> <p>12 other's state up front. 11:42AM</p> <p>13 So Internet data structure, I think, is going 11:42AM</p> <p>14 into, if you had such a collection of objects, these are 11:42AM</p> <p>15 the objects you probably want to keep in that collection 11:42AM</p> <p>16 of objects. 11:42AM</p> <p>17 BY MR. SILBERT: 11:42AM</p> <p>18 Q Okay. Okay. Would you look at two pages more 11:42AM</p> <p>19 at -- on the page that ends with the Bates No. 624. 11:42AM</p> <p>20 A Yes. 11:42AM</p> <p>21 Q And do you see the bolded term "authentication 11:42AM</p> <p>22 type"? It's in the top third -- 11:42AM</p> <p>23 A Yes, I see that. 11:42AM</p> <p>24 Q -- of the page? 11:42AM</p> <p>25 A Yeah, I see that. 11:42AM</p> <p style="text-align: right;">Page 84</p>
<p>1 testimony. 11:39AM</p> <p>2 THE WITNESS: So I don't know when Cisco 11:39AM</p> <p>3 implemented OSPF first, so it's hard to say what 11:39AM</p> <p>4 happened first. 11:39AM</p> <p>5 Again, a corollary comment, a lot of times Cisco 11:39AM</p> <p>6 is -- is the driver of technologies, and we implement 11:39AM</p> <p>7 things, and then we publish standards off it, so there 11:39AM</p> <p>8 could be a coincidence where it has been used in Cisco 11:39AM</p> <p>9 before or -- or in a standard document before -- again, 11:39AM</p> <p>10 I don't know enough history on this that what happened 11:40AM</p> <p>11 when. 11:40AM</p> <p>12 BY MR. SILBERT: 11:40AM</p> <p>13 Q Okay. You are going to agree with me, though, I 11:40AM</p> <p>14 think, that the standard itself uses the acronym OSPF; 11:40AM</p> <p>15 right? 11:40AM</p> <p>16 A The document does create the acronym for the use 11:40AM</p> <p>17 for the document. 11:40AM</p> <p>18 Q Okay. Would you turn to the page that ends in 11:40AM</p> <p>19 the Bates No. 622? 11:40AM</p> <p>20 MR. NEUKOM: Sorry, what page, David? 11:40AM</p> <p>21 MR. SILBERT: Bates No. 622. 11:40AM</p> <p>22 MR. NEUKOM: Okay. Thank you. 11:41AM</p> <p>23 BY MR. SILBERT: 11:41AM</p> <p>24 Q Do you see Section 6 that's with the heading "The 11:41AM</p> <p>25 Area Data Structure"? 11:41AM</p> <p style="text-align: right;">Page 83</p>	<p>1 Q Under the OSPF standard, does an operator specify 11:42AM</p> <p>2 the authentication type to be used for an area? 11:43AM</p> <p>3 MR. NEUKOM: Objection; vague, calls for opinion 11:43AM</p> <p>4 testimony. 11:43AM</p> <p>5 THE WITNESS: So as per this document, what was 11:43AM</p> <p>6 described here is in a area you could specify if 11:43AM</p> <p>7 authentication is in use, and I think it also refers to 11:43AM</p> <p>8 this other section where you can find details of what 11:43AM</p> <p>9 types of authentication, Appendix E. 11:43AM</p> <p>10 As a -- as an operator, you may or may not choose 11:43AM</p> <p>11 to have authentication. That is totally up to you. If 11:43AM</p> <p>12 you think your network is very secure, you may choose to 11:43AM</p> <p>13 not have authentication. If you really want to secure 11:43AM</p> <p>14 your network, there are a variety of ways to 11:43AM</p> <p>15 authenticate it, and this just refers to that -- what 11:43AM</p> <p>16 mechanisms exist at the area level. 11:44AM</p> <p>17 BY MR. SILBERT: 11:44AM</p> <p>18 Q Okay. And would you agree that authentication is 11:44AM</p> <p>19 a concept that's introduced in this OSPF specification? 11:44AM</p> <p>20 MR. NEUKOM: Objection; calls for opinion 11:44AM</p> <p>21 testimony and vague. 11:44AM</p> <p>22 THE WITNESS: This document has used the term 11:44AM</p> <p>23 "authentication," but basically what we are talking 11:44AM</p> <p>24 about is: Are there ways -- are there ways to validate? 11:44AM</p> <p>25 Are there ways to secure communication between devices? 11:44AM</p> <p style="text-align: right;">Page 85</p>

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1	MR. SILBERT: Okay. We need to change the tape, 11:44AM	1	Q -- there is a bold entry "authentication type." 12:25PM
2	so we will have to pause there. 11:44AM	2	Do you see that? 12:25PM
3	THE VIDEOGRAPHER: This marks the end of 11:44AM	3	A Yes. 12:25PM
4	Volume 1, Media No. 1 of the deposition of Abhay Roy. 11:44AM	4	Yeah, so what -- what that -- in the -- what 12:25PM
5	The time is 11:44 a.m. We are off the record. 11:44AM	5	is -- what it's trying to say in the RFC is if you have 12:25PM
6	(Lunch recess taken.) 11:44AM	6	for area some objects -- one of the objects is the 12:25PM
7	---o0o--- 11:44AM	7	authentication type. That's what that document is 12:25PM
8	11:44AM	8	talking about. 12:25PM
9		9	Q And the -- the document is getting at the idea 12:25PM
10		10	that an operator can set the authentication type for 12:25PM
11		11	objects in an area; correct? 12:25PM
12		12	MR. NEUKOM: Objection; document speaks for 12:25PM
13		13	itself, calls for opinion testimony. 12:25PM
14		14	THE WITNESS: Yeah, so document is talking about, 12:26PM
15		15	at the area scope, if you support authentication, you 12:26PM
16		16	probably want to store objects related to the 12:26PM
17		17	authentication in that type of data store. 12:26PM
18		18	BY MR. SILBERT: 12:26PM
19		19	Q Okay. So looking at the command "ip ospf 12:26PM
20		20	authentication," the term "ip" in that command refers to 12:26PM
21		21	the Internet protocol standard; right? 12:26PM
22		22	MR. NEUKOM: Objection; misstates prior 12:26PM
23		23	testimony. 12:26PM
24		24	THE WITNESS: "ip" in that command refers to 12:26PM
25		25	Internet Protocol Version 4. 12:26PM
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1	AFTERNOON SESSION 12:24 P.M. 11:44AM	1	BY MR. SILBERT: 12:26PM
2	12:24PM	2	Q Okay. And that's a standard that's published by 12:26PM
3	THE VIDEOGRAPHER: We are back on the record at 12:24PM	3	the IETF; correct? 12:26PM
4	12:24 p.m. 12:24PM	4	A Internet protocol is an RFC 791, which is 12:26PM
5	This marks the beginning of Volume 1, Media No. 2 12:24PM	5	published by the IETF, yes. 12:26PM
6	of the deposition of Abhay Roy. 12:24PM	6	Q Right. 12:27PM
7	Please continue. 12:24PM	7	And -- and 791 might be an earlier version, but 12:27PM
8	BY MR. SILBERT: 12:24PM	8	are you aware that there's a separate RFC that's a 12:27PM
9	Q Good afternoon, Mr. Roy. 12:24PM	9	standard for Internet Protocol 4? 12:27PM
10	Before the lunch break, we were talking about the 12:24PM	10	A I don't know exactly if -- if there is a one -- 12:27PM
11	command "ip ospf authentication." 12:24PM	11	there is a version later than this which supersedes 12:27PM
12	Do you recall that? 12:24PM	12	this -- 12:27PM
13	A Yes, I do. 12:24PM	13	Q Okay. 12:27PM
14	Q Do you agree that authentication is a parameter 12:24PM	14	A -- but there might be; might not be not aware. 12:27PM
15	that's introduced in the OSPF specification? 12:24PM	15	Q Okay. And in the command "ip ospf 12:27PM
16	MR. NEUKOM: Objection; vague, calls for opinion. 12:24PM	16	authentication," "ospf" refers to the OSPF 12:27PM
17	THE WITNESS: I think you referred me to some 12:24PM	17	specification, Exhibit 56; correct? 12:27PM
18	section. Could you point me to that again? 12:24PM	18	MR. NEUKOM: Objection; misstates prior 12:27PM
19	MR. SILBERT: Yeah. We were looking at the page 12:24PM	19	testimony. 12:27PM
20	that ends in Bates No. 624 in Exhibit 56, which is the 12:24PM	20	THE WITNESS: So OSPF command -- or this command, 12:27PM
21	OSPF specification dated October 1989. 12:25PM	21	which is in Cisco's implementation, refers to the 12:27PM
22	THE WITNESS: Was that 624? 12:25PM	22	protocol called "OSPF," which is documented in an IETF 12:27PM
23	MR. SILBERT: Yes. 12:25PM	23	stand -- IETF RFC. 12:28PM
24	Q Yeah, in the top third of the page -- 12:25PM	24	BY MR. SILBERT: 12:28PM
25	A Oh, yes. Yes. Sorry, my bad. 12:25PM	25	Q Okay. And in the term "ip ospf authentication," 12:28PM
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